AMERICAN AGRICULTURIST

FOR THE

FARM · GARDEN · & · HOUSEHOLD

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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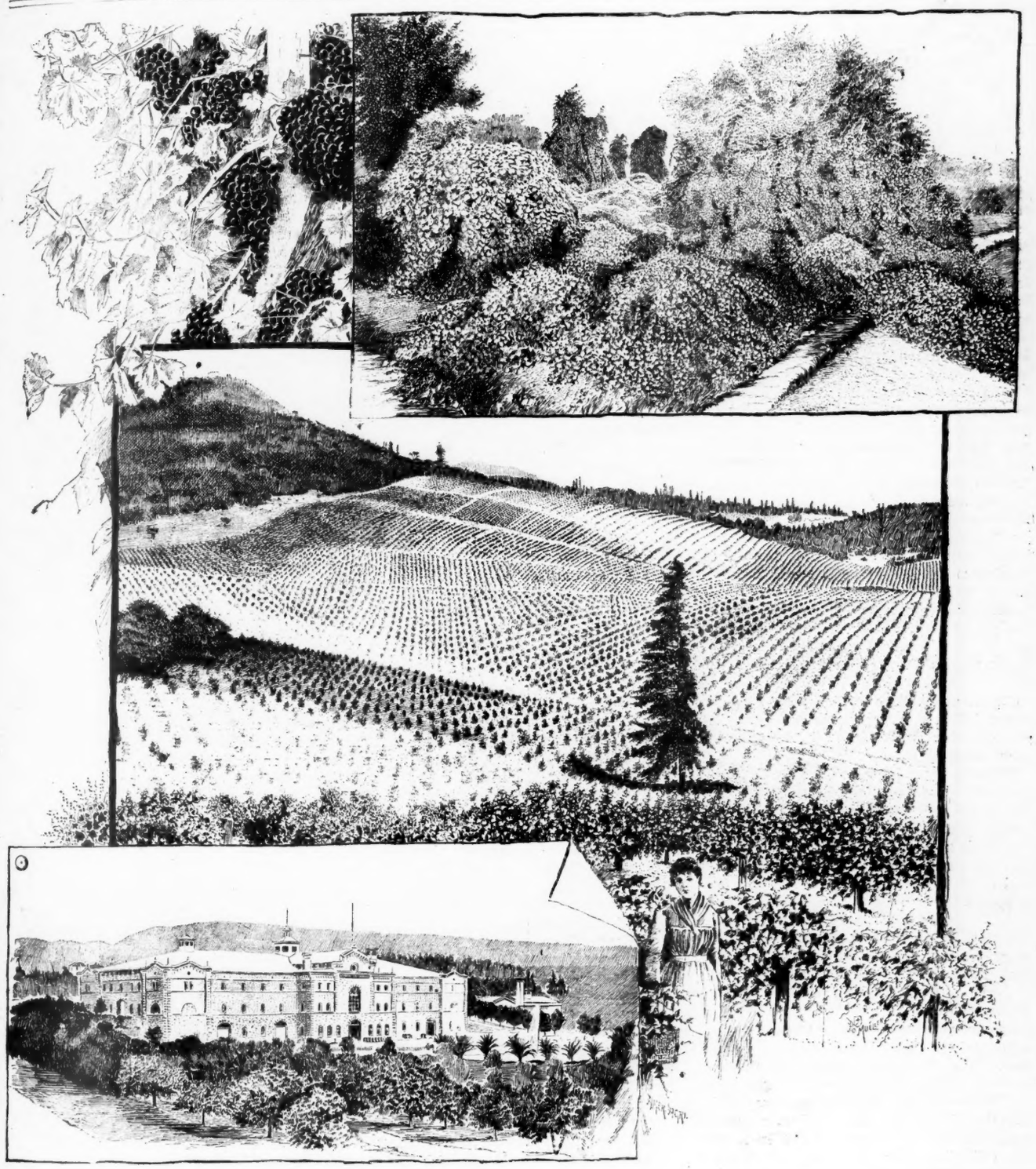

CALIFORNIA VINEYARDS AND THEIR PRODUCTS.

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AMONG THE CALIFORNIA VINEYARDS.

CHARLES H. SHINN.

CALIFORNIA grape interests are more than a century old. The most important vineyard districts of California, in point of size, yield, and investment of capital, are in the valleys that slope to San Francisco Bay, but large vineyards are situated two hundred miles north, as well as in the extreme southern parts of the State. Vineyards were planted by the Spanish padres of San Diego, Los Angeles, and Monterey, before the battle of Bunker Hill was fought. Long before the American conquest, the land overflowed with the luscious fruits of the vine, and more than one town became famous for its native wines. All the records of early California show the comparative abundance of grapes. Every Mission had its vineyard, and, in towns like Los Angeles, each settler planted all the vines he chose. The variety was always the "Mission," which much resembles the famous El Paso grape, an excellentt table variety, not without value for wine, but entirely supplanted in these days by far superior sorts. When the gold discovery brought thousands of settlers to California, the value of the vineyards then in bearing increased rapidly. Fresh grapes, in 1850 and 1851, were worth from four to five dollars a pound. Nevertheless, it was not until 1858 that the acreage of vineyards was greatly increased. Californians were too busy mining and speculating. At this time, table grapes from Los Angeles, packed in sawdust and carried to San Francisco by stage, sold for a dollar a pound. In this year the State Agricultural Society began to urge viticulture, and, in 1861, the Governor appointed commissioners to report upon grape-culture. One of these commissioners was the late Agostin Haraszthy, the pioneer and leader of the vast viticultural industry of the State. He went to Europe and Asia Minor, brought all the best varieties to be obtained there, and distributed two hundred thousand cuttings and rooted vines over California.

The State Board of Viticulture was organized in 1880, and has been a very important factor in the growth of the industry. It now receives an annual appropriation of fifteen thousand dollars a year, out of which it pays several salaried officers, publishes reports, holds two conventions of grape-growers each year, employs a State analyst, keeps up an experimental cellar, and makes every needed investigation into the condition of vineyards. The Agricultural Department of the State University, under Professor E. W. Hilgard, carries on experimental vineyard stations, and has a cellar, the latter at Berkeley. The State is at present districted into seven viticultural districts: San Francisco, Napa, Sonoma, Sacramento, San Joaquin, Los Angeles, and El Dorado, some of these including many large counties.

The best way to understand the California vineyards is to disregard the district classification, and arrange the vineyards according to soil and situation. We have sea-coast vineyards, near the ocean, within the fog-belt; Coast Range valley vineyards; foothill vineyards above these valleys; lowland vineyards in the great interior valleys; Sierra foothill vineyards, above the interior valleys, and rising to the limits of successful grape culture. Vines have been planted in California, in every imaginable sort of a place and on all kinds of soils, from the reclaimed tulé and willow land to the adobes of the valleys and the red volcanic dust of the northern Sierra foothills. It is because the territory over which vineyards are scattered is so immense that the quality of the wine produced varies so greatly. Even in table grapes, while the fine European sorts are grown wherever the vine is planted at all, some regions produce a much finer quality than others. The shipping grape must be grown without irrigation. The hills and the extreme valley verges are best. [The central portion of our frontispiece represents a vineyard in the foothills. Below is a wine-house.]

We can divide the California grape-field, according to results, into the table-grape regions and the wine regions. The latter again subdivide into the claret, the sauterne, the sherry, the port, and other districts. For table grapes, the Santa Cruz mountains and the western foothills of Santa Clara form the best region in the Coast Range. Black Morocco, Cornichon, Muscat, Rose of Peru, Emperor, and other choice grapes, that will ship with safety to all parts of the United States, come from these mountain lands, until the November rains ruin the late crop. Farther inland, under the shadow of Monte Diablo, is the beautiful Alhambra Valley, another famous late district. North, across Suisun Bay, around Vacaville and Winters, the early table-grape district of the State is situated. For raisins, Woodland and Davisville form one region; Fresno leads the industry; San Bernardino and San Diego also make a strong showing. As far north as Shasta raisin grapes are being planted. There will probably be as many as ten large centers of this branch of grape-growing in a few more years. Kern, Tulare, Stanislaus, and Merced all possess especial advantages for this industry. The great wine-vineyards are scattered all over the State. Alameda County has two of the most promising wine districts, the Mission San Jose and the Livermore, both on limestone soils. Napa Valley is becoming one continuous vineyard for twenty miles. Sonoma, Santa Rosa, Russian River, Santa Clara, and twelve or fifteen lesser valleys of central California contain more vineyards than orchards.

Then, in the Sacramento Valley and the San Joaquin, are the Yolo and Solano vineyards, the San Joaquin and Fresno districts. South, San Luis Obispo, Ventura, Santa Barbara, Los Angeles, San Bernardino, and San Diego are all wine-making regions. The San Gabriel Valley leads at the South, as Napa Valley does at the North.

No one pretends to say that the best vineyard soil has all been occupied, or even that the especially choice spots for some future "Chateau Lafitte" wine of California has yet been discovered. All is in the process of evolution. The hill-sides are being bought for vineyards; the chapparal is being cleared; wine-cellars are being blasted out of the rock; men are testing varieties, and experimenting with blends, and adapting European methods to soil and climate here. All this is slow work, and every now and then there is waste and loss; bad wines are thrown on the market; mistakes are made that delay the progress of the Californian grape industry. But, looking back ten years, one can easily see many and great advances. The old question, "Who drinks a California wine?," has lost its point. The prizes won by Californian growers in Australia and Europe settled this matter. The tables of Californian exports tell the same story. In 1875, we sent to New York 464,000 gallons and 74 cases; in 1887 we sent 1,630,227 gallons and 1,335 cases. We are now supplying wine to Central America, British Columbia, Mexico, Honolulu, Japan, China, and most of the countries that lie around the Pacific Ocean. But the great market is felt to be the rest of the United States. California expects to be recognized as the vineyard of America.

The thing that impresses visitors most is, I think, our table-grape supply. When Mr. George Cary Eggleston was on this coast a few years ago, he said that "table grapes by the ton and the thousand tons, for the whole of the United States, from July to November," ought to be the Californian planters' ambition. Given cheap transportation, organization in the matter of handling, and the auction-room system everywhere, and the consumer can have his Hamburgs, Muscats, and Moroccos at five cents a pound. Grapes can be grown cheaper, pound for pound, than wheat; they are sold every year for less. While some choice wine-grapes bring twenty dollars a ton in the vineyards, and table grapes sometimes twice that, the Malvoisies and Missions sold this last summer at from four to six dollars a ton. The yield, however, was ten tons per acre. The time will come when car-loads of table grapes of all the best sorts will leave the vineyard for the Eastern markets at a cost to the packer of but a cent a pound. It will be the fault of the American people if they do not have cheap grapes.

One of the gifts of the Pacific Coast to the grape-growers of the rest of the world has been the famous native resistant stocks, the *Vitis Californica* and the *V. Arizonica*. These grapes grow along the bottoms and form vast arbors, often covering oaks, cottonwoods, and sycamores to their tops. They have been widely distributed, and have proved of much value. The experiments made at the State University, by Professor Hilgard, and at Livermore by Mr. Charles Wetmore, of the Viticultural Board, began about 1876. The use of resistant vines is extending, and planters begin to realize that it is better to have a small vineyard of the best varieties, on safe stock, and increase its size slowly, than to plant hastily on a large scale. [See frontispiece, upper right hand.]

Arpad Haraszthy, President of the Viticultural Board, urges the establishment of well-equipped experimental vineyards in all the leading grape districts. This, it is believed, will soon be done, and it is very important. Good bearers and good quality are what the viticulturists want; we must aim at making salable high-grade wines, to market under local labels, and so build up a reputation.

A few of the large wine-makers of California dump their wines wholesale on the New York market, and the buyers mix, adulterate, and label to suit themselves. The best wines in the State are made by comparatively small growers, who superintend their own cellars and have the requisite capital to properly age their wines.

The annual commercial review of the grape industry, for January, 1890, published in the San Francisco daily newspapers, estimates the total acreage planted to grapes at two hundred and fifty thousand acres, which includes last winter's planting. The wine crop of 1889, owing to the early rains, was only fourteen million gallons. The total raisin crop of 1889 was twenty-eight million pounds—worth one million four hundred thousand dollars to the producer. It took fourteen hundred cars to move the raisin crop to market. In eight years the raisin crop has multiplied nearly sixteen-fold.

THE COST OF THE PRIZE CORN CROPS.

This important subject could not be fully discussed in the presentation (in our March number) of the results of the corn class of the AMERICAN AGRICULTURIST Prize Crop Competition of 1889. Below are stated the gross expenses of each crop of one acre. The second column shows the value of the unexhausted manure remaining in the soil after the crop was removed. Some of these acres were manured so heavily that the crop grown did not begin to take up as much plant-food as was supplied. Assuming that the elements in the stalks and cobs are returned to the soil by judicious feeding of the former and burning the latter, the shelled corn, if sold off the farm, contains about all that is really taken from the soil. Deducting from the value of the manure applied, the value of the nitrogen, potash, and phosphoric acid contained in the shelled corn, we ascertain the value of the unexhausted manure, as stated in the second column. Subtracting this amount from the total expenses gives the net expenses per acre, and this sum divided by the yield per acre, of course, gives the net expenses per bushel, as stated in the third column. The fourth column, for convenience, contains the actual yield in bushels of crib-cured shelled corn on each acre. In some of the crops, where but little or no manure was used, the value of the plant-food carried off in excess of the amount supplied is justly added to the expenses; such instances are marked by an asterisk (*). Of course, in the absence of analyses of all the manures and fertilizers used, it is impossible to give these data with any degree of scientific accuracy, but it is believed that our estimate, based on the facts at hand, is fair enough for practical purposes.

Name and	*Location.*	*Total Expenses per acre.*	*Value of Unexhausted Manures.*	*Net Expenses per Bush*	*Bush. of Crib-c'd Corn per Acre.*
Zachariah J. Drake..	Marlborough Co., S.C.	$264.42	$158	$0.44	239
Alfred Rose,.....	Yates Co., N. Y.....	62.25	* 16	.41	191
George Gartner	Pawnee Co., Neb.....	87.60	* 2	.47	151
J. Snelling.....	Barnwell Co., S. C....	57.10	19	.33	122
W. L. Peck.....	Rockdale Co., Ga.....	46.00	7	.32	121
B. Gedney	Westchester Co., N.Y.	131.50	71	.54	112
E. P. Kellenberger...	Madison Co., Ill.....	26.00	* 15	.30	105
H. M. Kersey.....	Marshall Co., Ia.	15.39	* 8	.23	100
L. S. Wells.....	Hartford Co., Ct.....	132.60	66	.23	99
E. W. Lupton.....	Berkeley Co., W. Va..	31.69	* 4	.38	95
P. C. Hiller.....	Lancaster Co., Pa.....	37.37	* 8	.47	96
E. R. Towne	Washington Co., Vt..	117.25	80	.40	94
Morris C. Smith.....	Linn Co., Ia.....	33.67	* 7	.45	91
R. T. Gillespie.....	York Co., S. C.....	37.00	4	.36	92
Jacob S. Pfrimmer...	Harrison Co., Ind.....	25.22	* 5	.34	90
Henry Campbell.....	Monmouth Co., N. J..	49.74	4	.50	90
D. Pence	Fairfield Co., O.....	33.87	* 7	.45	90
J. M. Graham.....	Hickman Co., Tenn...	72.13	26	.52	89
A. L. Griffith.....	Monroe Co., O.....	60.32	19	.47	87
R. M. Allison	York Co., S. C.....	66.78	26	* .46	88
M. H. Carraway.....	Harrison Co., O.	40.75	3	.44	87
Henry Butler.....	Washington Co., Kan.	25.85	4	.25	87
R. M. Allison	York Co., S. C.....	79.95	45	.41	86
Abel Allen, Jr.....	Caldwell Co., Mo.	15.85	* 12	.33	84
E. M. Williamson	Darlington Co., S. C...	64.30	35	.35	83
J. C. Miller.....	Fairfield Co., O.....	25.05	* 2	.34	79
Ira L. Hershey.....	Lancaster Co., Pa.....	61.22	23	.49	78
J. N. Muncey	Buchanan Co., Ia.	34.45	6	.37	77
Fonshee J. Tebbs.....	Harrison Co., Ky.	21.00	* 8	.37	76
John C. Dillon.....	Hampshire Co., Mass.	97.22	40	.76	75
A. H. White.....	York Co., S. C.....	84.15	36	.64	75
Joseph S. Wells.....	Hampshire Co., Mass.	106.49	54	.71	74
Edwin Harper.....	Georgetown Co., S. C.	49.80	16	.46	73
Alfred Fuller.	Cattaraugus Co., N.Y.	46.23	5	.57	72
W. S. Westcott	Hampshire Co., Mass.	129.22	60	.96	72
Frank Goodwin.....	Middlesex Co., Mass..	133.26	56	1.15	67
William H. Tarbox...	Kent Co., R. I.....	55.60	15	.62	66
Henry Tillson	Franklin Co., Mass...	67.38	21	.70	66
Ezra Michener.....	Bucks Co., Pa.....	56.60	20	.58	63
E. J. Grover.....	Milwaukee Co., Wis..	26.65	* 2	.47	61
George P. Smith.....	Franklin Co., Mass ..	80.30	29	.92	56
E. A. Robison.....	Johnson Co., Ind. ...	33.10	1	.57	56
Charles J. Tilden.....	Hartford Co., Ct.....	59.00	23	.64	55
Henry Wood.....	Richland Co., S. C....	66.80	30	.80	46
James McCutchen....	Williamsburg Co. S.C.	60.50	30	.68	45
14 Western crops.....	Average.....	34.56	* 2	.39	87
14 Southern crops....	Average.....	71.54	30	.46	95
17 Eastern crops.....	Average.....	83.72	32	.63	84
Average of the whole	forty-five crops.....	63.27	20	.49	89

The variations in the expenses are striking, but the most interest attaches to the averages. Many items of expense were included in most of these crops that would not be included in crops grown for profit. These items would reduce the cost fully five to fifteen cents per bushel, without interfering materially with the yield. The large amount of unexhausted manure in Mr. Drake's land reduces the net expenses of the grand prize crop to forty-four cents per bushel of crib-cured shelled corn. No allowance has been made in any case for the value of the stalks as fodder—a most important source of profit, that would greatly reduce the expenses per bushel, especially with the Eastern and Southern crops. The credit on this account is variously estimated at from five to twenty dollars per acre.

FARMERS AND THE ELEVENTH CENSUS.

MORTIMER WHITEHEAD.

On the principle of the field-joke of our boyhood, that "more corn grows in crooked than in straight rows, because there are more of them," so are farmers, more than any other one class, most interested in the eleventh national census to be taken this year, "because there are more of them." Every ten years his "taking account of stock," as the merchant would say, is undertaken by Uncle Sam, to see just where we stand. How many more farms? How many more factories? How many more dollars? How many more people? Where have we made progress? where gone backward? All these points are obtained by a house-to-house and farm-to-farm visitation by an army of 40,000 enumerators, who will, in every corner of our great country, start out on the second day of June next and ask the thousands of questions that must be asked to get a fair count of the facts and figures of all our varied industries. As we are just commencing our second hundred years as a republic, this becomes the eleventh census, and will be doubly important and interesting in its comparisons with that taken ten years ago, and with the *first*, which was taken one hundred years ago.

The census year began June 1st, 1889, and ends May 31st, 1890. That is, the statistics of crops, manufactures, mining, etc., cover the products of the twelve months named. The Superintendent of the Census is Robert P. Porter, who was appointed early last year. The law provides for the appointment of Supervisors, one or more to each State and Territory, according to its size and population, the number of Supervisors being limited to 175. In the census of 1880 there were 140 Supervisors. The Supervisors divide up their districts into subdivisions most convenient for the purpose of enumeration, designate to the Superintendent and (with his consent) employ suitable persons, residents of such subdivisions, for the purpose of enumeration. No subdivision assigned to any enumerator can exceed 4,000 inhabitants. Of the enumerators, the law says that "preference shall, in all cases, be given to properly-qualified persons honorably discharged from the military or naval service of the United States residing in their respective districts." So the old soldiers have first chance in this case, and are once more "at the front."

The whole work of the census has been broadened, and the inquiries will bring out information never before obtained in a census year. The number and amount of mortgages on farms and homes will be collected, and, it is thought, will be an important feature in its bearing upon a number of economic questions. It is to be hoped that farmers generally have heeded the appeal of Superintendent Porter, sent out to them through the press a year ago, in which he said: "It is important to the country that the returns in relation to farm-products and live-stock should be full and correct. The enumerator, in the house-to-house visit he will make during the month of June, 1890, is constantly met with the fact that farmers keep no books, and hence returns are not unfrequently guess-work. The census year begins June 1st, 1889, and ends May 31st, 1890. If farmers throughout the country would note this fact, and keep account of the products of their farms during the census year, it would be of material aid in securing reliable returns for the eleventh census." This shows how farmers have an opportunity to help themselves.

In no part of the census work have the lines been extended more than in the direction of Agriculture. The Superintendent has arranged for more extended inquiries into all its varied branches, and in addition to the regular schedule, which will be more complete than ever before, he has ordered special investigations in several important branches, among which are Viticulture, Nurseries, Florists, Seed- and Truck-Farms, Semi-Tropic Fruits, Live-Stock on the great ranges, and in cities and villages; also, the name and number of all the various farmers' organizations, such as Agricultural and Horticultural Societies, Poultry and Bee Associations, Farmers' Clubs, Granges, Alliances, Wheels, Unions, Leagues, etc.

That farmers may know something of the information that is desired, and be thinking and preparing to give the figures, some of the leading lines of inquiry will, doubtless, be of interest. Keep in mind that the figures you are to give nearly all pertain to the year and crops of 1889, and not to the growing crops of this year, 1890. Some of the questions asked will be: Are you owner, renter for money, or for shares of the crop of the farm? Are you white or black? Acres of land, improved and unimproved. Acres irrigated. Value of farm, buildings, implements, and machinery. Cost of building and repairing. Cost of fertilizers. Amount paid for labor. Weeks of labor employed. Acres of grass lands cut for hay and pastured. Clover and grass seeds produced. Acres of natural and planted forest. Silos and their capacity. The special or "money crops," like sweet and Irish potatoes, onions, and market-garden crops, will be taken in acres and products—thus affording for the first time a basis for reliable reports in future of these important specialties.

The live-stock inquiry will be very exhaustive. The stock is all counted as the number on hand June 1, 1890. Horses and mules will be kept separate, and jacks and jennets, or jack stock, will be separated from the mules. The quality of working oxen, cows, and other cattle will be taken for the first time, as well as their number, as chickens, turkeys, geese, ducks, the value of poultry sold in 1889 and the number and value of eggs produced and sold. The number of stands of bees will be wanted for the first time, also the amount and value of honey and beeswax produced.

The great staples of wheat, corn, oats, cotton, tobacco, rice, sugar, flax, hemp, hops, and broom-corn will be wanted in acres, bushels, pounds, and values. And even peanuts have grown to be a crop of such importance in several States that their acres and yield will also be obtained.

The great horticultural interests, that are the main dependence of so many of our people, and an interest that has not previously had the attention its importance deserves, will have special consideration. Small fruits in all their varieties, including cranberries, none of which have ever been taken, will be wanted in acres and product. The same is true with vegetables and fruits raised for canning. In orchards, only apples and peaches have been counted before. This year it is hoped we shall get, besides these two, pears, plums and prunes, apricots and cherries—not only the acres and number of trees, but the "trees in bearing" and "young trees not bearing." Vineyards and Viticulture will not only have place on the regular schedules of acres in bearing vines, vines not bearing, grape product in 1889, raisins made (millions of pounds now in California every year), but a special and thorough investigation will be made into this branch of horticulture, that now has over $150,000,000 of invested capital. Special investigations and full reports will also be made upon the great nursery interests—the starting point in horticulture—and into the rapidly-growing business of the florists. Also the great truck- and seed-farms, and that other golden branch that has grown so luxuriantly since the last census, and never yet accredited for—the oranges, lemons, and other citrus and sub-tropic fruits—will be duly enumerated.

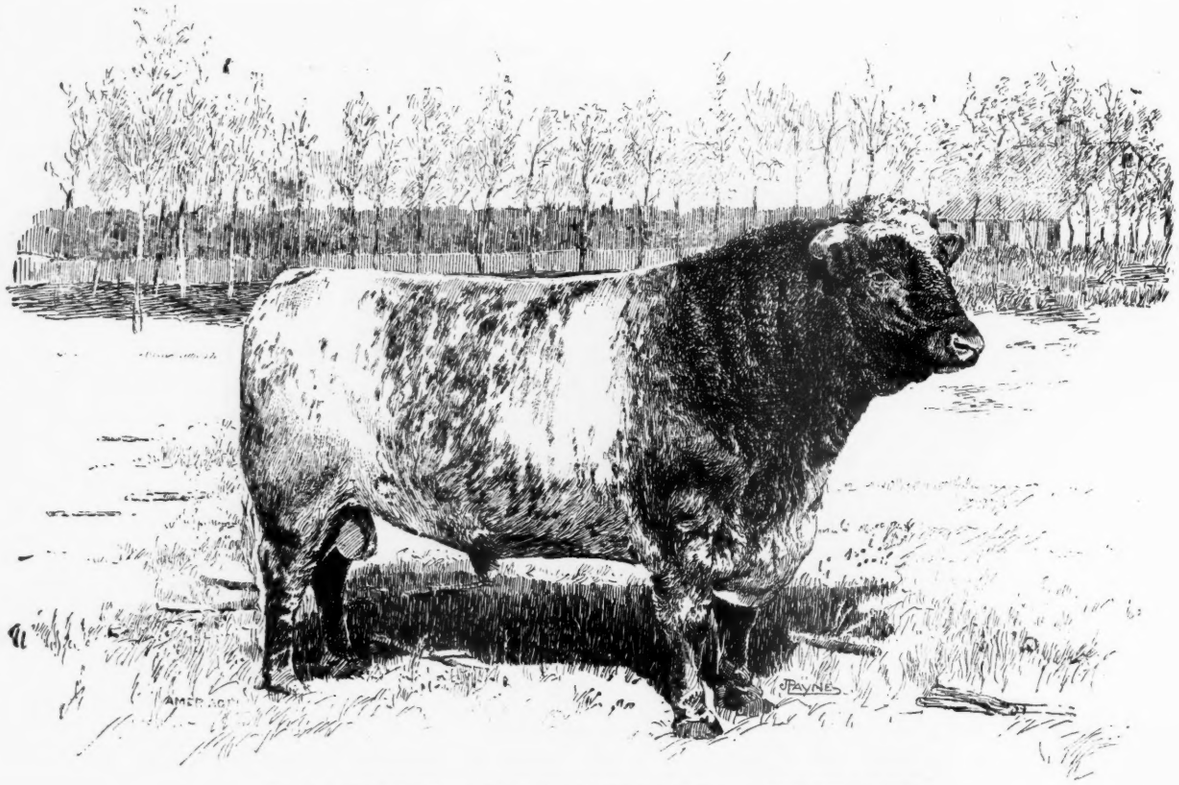


Fig. 1. SCOTCH SHORTHORN BULL CUPBEARER.

thus ascertaining whether they are full blood (recorded), grade (above half blood), or common or native stock (below half blood). The census of sheep will also for the first time be divided into Merino (fine wool), English breeds (long or medium wool), and "all other sheep." "Spring lambs," now such an important meat product, will be enumerated for the first time. The number of sheep killed by dogs will be ascertained for the first time in history, and the dogs themselves will be counted in city and country. The number of fleeces of wool and their weights, also of Angora and common goats, will be included.

The dairy, now one of our greatest industries, will have special attention, the questions asked covering the total amount of milk produced, sold for consumption in families, or sent to creamery or factory. The amount of cream, butter, and cheese produced and sold on the farm will be ascertained, but the butter and cheese made in creameries and factories will be taken in the Division of Manufactures, and will be more carefully counted than ever before. Swine will not be forgotten, and the number on hand, sold in 1889, consumed on the farm in 1889, and died of disease, will be wanted. The millions in poultry will be inquired into quite thoroughly, and for the first time the different kinds will be asked for,

While the above does not outline all the questions relating to agriculture, it will, I think, show that farmers are to receive special attention, and that it will be the fault of farmers themselves if we do not this year get the most complete and valuable set of figures pertaining to the most important industry in our country that we have ever had. Upon these results will depend much of our future legislation and the prosperity not only of farmers themselves, but of all others as well; for the progress of our country depends upon the intelligence and prosperity of its agriculture.

Let us all work together for good, and as farmers, during the bright days of June, do our share towards giving the grand figures that will show us to be the greatest and best country on earth.

THE SCOTCH SHORTHORN.

Scotch Shorthorns are very popular cattle from one end of the American continent nearly to the other, and are found all the way from Buenos Ayres up to the remotest corner of Manitoba, where, on the farm of Binscarth, is perhaps the northernmost herd of Shorthorns yet planted in America, and they are doing quite as well there as in Kentucky. In spite of national pride in their popularity all over the civilized world, the writer is bound to confess that there is, strictly speaking, no such thing as a Scotch Shorthorn. Scotland has her remnant of the old wild cattle at Hamilton Park, and her Kyloes, or as it is now the fashion to call them, West Highlanders. She has her Polled Angus in the Northeast, Polled Galloways in the far Southwest, and Ayrshires in the next county to the Galloways; but she has borrowed her Shorthorns from England, where, in the valley of the Tees, they have been native no one knows how long.

About the most thoroughly Scotch district of Scotland, viewed from the practical side, is Aberdeenshire and the three smaller adjacent lowland counties in the northeast corner of the little kingdom, and these are the home of the particular type of Shorthorns of which, rather more than fifty years ago, the two world-famed Quaker brothers, Amos and Anthony Cruickshanks, laid the solid foundation. The earlier Scotch breeders were all either wealthy landowners or gentlemen farmers; but John Cruickshanks, the father of the breeders, was a farmer and miller in a very humble way a few miles northwest of Aberdeen, and his sons began their work with one heifer, imported in 1837 direct from Durham, the early home of the breed. Next year they bought a bull, Inkhorn, from Capt. Barclay, adding on one and another from the north of England or from the Barclay herd till, within ten years, they had fifty females in their herd. Their Orange Blossoms were from the Barclay herd, and the highest priced Cruickshanks cow in America came from this tribe. But there was hardly a good herd in England or Scotland from which they did not, within the next twenty years, make carefully-judged selections, male and female, breeding them with their own rare skill. From 1863 to 1870 their principal bull was Champion of England 17,526, a bull almost unrivaled in individual merit and impressive power. A Kier-bred bull, Forth 17,856, was only second to the Champion in impressive power, but, so far as blood goes, there is not a more judicious blending of inbreeding and outcrossing in the history of breeding than that so long followed by the two brothers, and with such steadily-increasing success. Anthony died ten years ago, and within the last eight months his older brother has sold out the herd to Messrs. James Nelson and Sons, Liverpool, for exportation to Buenos Ayres. A portion of the herd has since been purchased to be retained in England. But there are scores of breeders all over the States and Canada who are careful to show how much of Cruickshanks blood is in the best beasts of their herd. The success of the two brothers naturally induced other enterprising farmers in the adjacent districts to follow suit, always with a very strong infusion of the best Cruickshanks blood; but perhaps the most notable successes in the same field have been achieved by Messrs. Campbell of Kinellar and Duthie of Collynie. Mr. Duthie had the rare

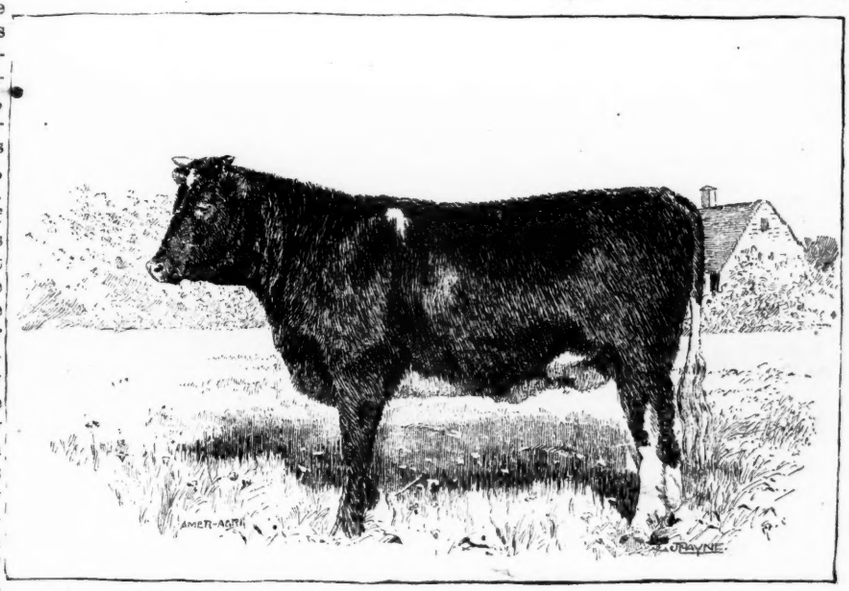


FIG. 1. THE CRUICKSHANKS HEIFER SEA MAID.

honor of hiring his bull, Field Marshal, for use in the Royal Herd at Windsor, where he served two seasons, but has lately been returned to Collynie.

Another Duthie bull, well known on this side the water, is Cupbearer (Fig. 1), imported by Luther Adams, bought at his dispersion sale by John Hope of Bow Park, Canada, and afterwards resold to Mr. M. A. Householder, of Cherokee Co., Kansas. Of the Kinellar stock no fewer than fifteen representatives came to the front at the last show at Toronto, including five prize-winning bulls. The accompanying portrait of Cupbearer is from a recent photograph, and truly represents his grand proportions. The cow, Fall Creek Rose, Fig. 3, is of Young Mary blood, with Cruickshanks top. The heifer, Sea Maid, Fig. 2, is a pure Cruickshanks. The portrait was taken when she was thirteen months old.

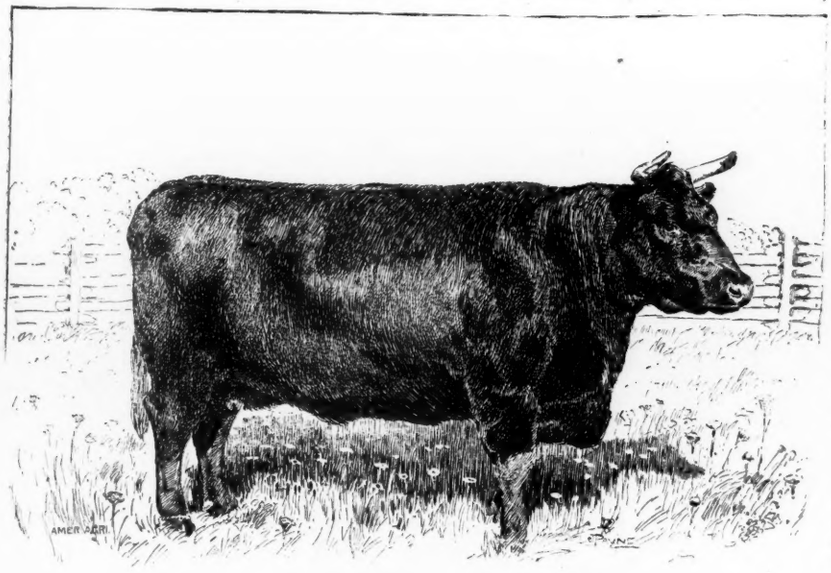


FIG. 3. THE SHORTHORN COW FALL CREEK ROSE.

The Scotch Shorthorn is, if possible, more generally known in Canada than in the United States. It has also taken hold at the antipodes, the leading shows in Australia and New Zealand having always winners tracing their descent to Aberdeen awa'. Shortly stated, the difference between the English and Scotch type of Shorthorn is that the latter is mainly a paying farmers' beast. Those far north breeders do not despise style, but their leading requirement is substance, and the power to lay on beef at the right places. Ability to pay its way, and the power to transmit unimpaired to its posterity well-defined structural merit, and a sound constitution, were the main points aimed at. Low legs, a blocky frame, early maturity, sound lungs, and a sound digestion are the conspicuous merits of the northern Shorthorn. A high-bred English Duke bull or Duchess cow is—if well groomed, well cared for and maintained, regardless of cost—nearly unapproachable in style and finish; but it was only very late in the day that the Cruickshanks took up with bulls of high-sounding names, such as Baron Killerby 23,364 and Prince Alfred 27,107. But it mattered not whether the beast they bought was patrician or plebeian—he must be good value for the purpose he was bought for. In short, the Scotch

Shorthorn is in his own field a walking embodiment of Scotch thrift, skill, enterprise, and practical success, built by Scotch farmers on the common produce of Scotch soil in a Scotch climate, and therefore robust enough to make his way in any climate where a Scotch man or beast finds it profitable to live. He is, like his owner, very plain in his tastes, thriving splendidly on any good pasture in summer, and on "neaps and strae" (turnips and straw) in winter. Those turnips, in spite of adverse chemical analysis, are highly conducive to healthy and rapid growth; the oat-straw from which his master's porridge meal has been taken is also good in its way, and if he gets a handful or two of that good oatmeal, and a pound or two of oilcake along with his "neaps," he will, either pure or crossed, hold his own from start to finish against any other breed—his nearest neighbor and most formidable rival, the Angus "doddie," not excepted.

FOLDING-COOP FOR SHIPPING POULTRY.

S. B. CONOVER.

A serious drawback to the business of shipping live poultry is occasioned by the loss upon empty coops. They are bulky and clumsy to handle, and, with the rough treatment they are likely to receive, they arrive back in very broken condition, if at all. The accompanying illustrations represent an unpatented folding-coop, which may be built at a small advance above the cost of the old, plain coop. The most convenient size is four feet long, three feet wide and one foot high, with a hinged partition through the middle. The bottom is made of boards four feet long and three-eighths of an inch thick. Four cleats, each three feet long, two and a half inches wide, and three-fourths inch thick, are fastened, one at each end, and two near the middle, with a space between the latter wide enough to admit the middle partition. The top and sides are open frames, made of hard-wood slats, two and a half inches wide and one inch thick, halved together at the intersections and the whole fastened with wire nails. One-eighth-of-an-inch holes are bored through the end and middle slats for the wires, which are slipped in as shown in the engraving. The top wires are close together, to keep the fowls from sticking their heads through. When completed, the sides are secured to the bottom by two pairs of strap hinges in each. One side is hinged to the inside of the coop, and the opposite one to the outside, as shown in the illustration. The ends are each made of a piece of board, twelve inches wide, two feet ten inches long, and three-eighths of an inch thick, hinged to the bottom by two pairs of wrought butts screwed to the outside. Two screw-holes are bored through each end-piece of the top and the end-board, into which screws are inserted to hold everything secure, when the coop is in transit. The middle cross partition is a piece of three-eighths inch board, twelve and three-fourths inch wide, and three feet long, with cleats across the ends and middle. It is hinged to the bottom and may be temporarily fastened like the ends. All the lumber, except the framed ends and top, is of pine or other soft wood.

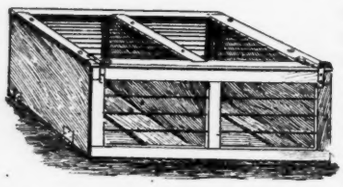


FIG. 1. THE COOP IN POSITION.

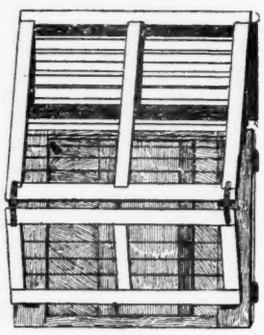


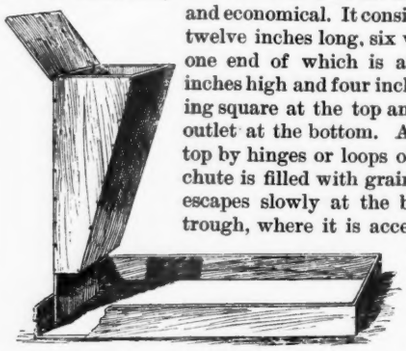
FIG. 2. THE COOP FOLDED.

Fig. 1 shows the coop set up ready for use. The ends may be let down to fill or empty the coop. When not in use, the screws are removed from the top slats, the middle partition turned down, the ends folded backward under the bottom, and the upper works folded down, as shown in Fig. 2. When two or more are to be shipped together, they are laid in a bundle with the bottom outward, and bound together. A bundle of five will occupy little more space than a single non-folding coop. When properly tied together, the wires and slats are fully protected. The advantages of such a coop are obvious.

Starting with Poultry.—The questions, how many fowls to keep, the best variety to begin with, and how to manage profitably, come up to the farmer with his first thought upon the subject of keeping poultry. He should not enter a new field of enterprise hastily, anticipating more than he can make his stock produce for him. If he has suitable accommodations, one hundred, or even fifty, blooded fowls are ample. They can be made to pay a larger net profit than double the number of ordinary dunghill stock. For the farm, the Light Brahma, Plymouth Rock, Wyandotte, and White Dorking are among the best. The white varieties look better about the barn. The Barred Plymouth Rock, Langshan, Laced Wyandotte, and Java are also excellent. A farmer who carefully studies the best ways of handling his poultry is taught by his own observation and experience how to manage them profitably.

FEED-BOX FOR PIGEONS.

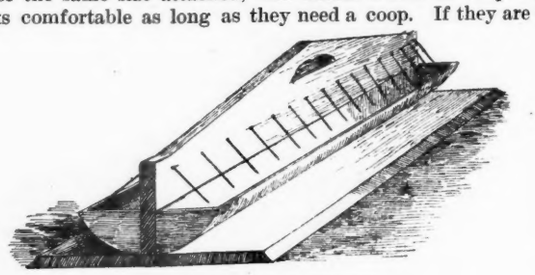
The feed-box depicted herewith was designed by Harry M. Dore of California, who writes us that he finds it very convenient and economical. It consists of a shallow trough, twelve inches long, six wide, and four deep, to one end of which is attached a chute eight inches high and four inches wide, with an opening square at the top and tapering to a narrow outlet at the bottom. A lid is attached to the top by hinges or loops of wire or string. This chute is filled with grain or other food, which escapes slowly at the bottom, into the feed-trough, where it is accessible to the birds. In the engraving the lower left-hand corner is broken away, to show the whole inside of the trough. The lid is also represented as open, to display the inside of the chute. The structure is made of half-inch pine or other soft wood, and can be easily made by any one who can handle a saw, plane, and hammer.



PIGEON FEED-TROUGH.

SHELTER AND FEED-TROUGH FOR CHICKS.

It pays to have a good, dry, comfortable house for young chickens, whether they are kept in brooders or under hens. No brooder that stands outside in all sorts of weather will keep little chicks steadily warm and comfortable, though a good one will do it, when placed in a weather-proof building. Small chicks, under the care of hens, do well enough in common coops, set outside during dry, warm weather; but a week of cold, stormy weather invariably injures and stunts them to a greater or less extent. They cannot sit on wet ground or on a wet floor, even under a warm hen, night after night, and remain healthy. Cheap, make-shift coops can, by being placed in a building or under a good shed, be made to answer the purpose of protecting a hen and her brood from cold, but they are far inferior to well-made, floored, vermin-proof coops. A really good out-door coop should have tight floor, sides, and roof, so that rain or snow cannot beat into it; be well-lighted, well-ventilated, and easily cleaned out. It should rest on low runners, so that it can easily be moved about. A pane of glass, six by eight inches, set in each side, will admit light enough; an opening three inches square, at each end, close under the roof, and covered with wire-screen, will supply ventilation. Such a coop, eighteen inches square, with run of the same size attached, will enable a hen to keep fifteen chicks comfortable as long as they need a coop. If they are well made, painted with mineral paint, and piled up under cover when not in use, they will last a life-time. It is not a difficult matter to make such coops, and a single brood of chicks raised in one of them will pay for half a dozen.



FEED-TROUGH FOR CHICKS.

Another thing that pays is a trough to feed the young chickens in. Whether they are kept in brooders or with hens, feed-troughs,

like the one illustrated herewith, are almost indispensable as a means of preventing diseases of the mouth and throat. The base and center-piece are inch-board; the troughs on each side are tin. Over the troughs are wires, which pass through the center-piece, are bent downward, and extend over the troughs far enough to prevent the chicks from getting into them. The engraving shows the form of the troughs so plainly that almost any one can make them. After feeding, the trough should be rinsed out and kept perfectly clean, which is an easy matter if attended to daily.

A CONVENIENT POULTRY-HOUSE.

R. G. NEWTON, DAKOTA.

A poultry-house on the farm must be a combination of cheapness, warmth, convenience and several other desirable points, or poultry-keeping will be a source of annoyance and waste of time, instead of pleasure and profit. The following plans and designs are the result of selection and adaption of some good points from a host of plans, with some original ideas:

Fig. 2 shows a ground plan of the buildings, which give three houses and sheds with their adjoining yards, but this can be modified to suit the wants of the builder, and the plan may be reduced to one pen or as many as are desired. Referring to the plan, the entrance to buildings is by the door at the right hand, which opens into a passage leading through the length of the entire building. This passage should be wide enough to give room to run a wheelbarrow, or better, a box with handles like a wheelbarrow with the wheels in front; Fig. 3. This will be more likely to be on hand when wanted. The floor of this passage is raised eighteen inches from the ground; the space underneath is utilized for a passage from the pens to the sheds, also for the nests. Access to these is by means of one of the boards of the floor hung on hinges. These

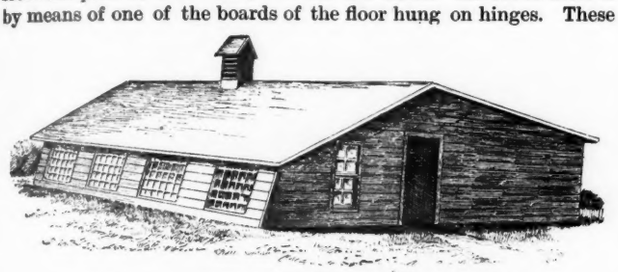


FIG. 1. PERSPECTIVE VIEW OF POULTRY-HOUSE.

nests being on the ground will be cooler in summer and warmer in winter than if placed in the building, as usually is done. They can also be shaded by tacking a strip of cloth in front of the entrance, and will prevent the hens acquiring the habit of eating their eggs. The first room on entering the building will be No. 1. This should be at least ten feet wide, and is for storing the different varieties of feed, gravel, bone meal, etc., for the hens; an egg cabinet or set of shallow drawers with bran in the bottom for storing the eggs to be used for setting or other uses; also room for several coops for sitting hens, but if more than one or two pens of fowls are kept, the room will have to be enlarged to correspond. The other room, No. 2, is under the shed part, and is for storing dry earth, manure from the fowls, etc. The roosts are of 2 by 4 scantling, supported by cleats at each end, and can be removed for cleaning. Below them is a board ten or twelve inches wide, forming the front of the box for droppings. These should be covered with dry earth, swamp muck or land plaster every day or two, and the box cleaned out at least once a month, or oftener if possible. The dusting box is under the window. D is a shelf about four or five inches lower than the floor of the passage, on which the fowls stand while eating. At the end of the nests is a passage for fowls between the pens and the sheds. Fig. 1 shows a perspective view. The front is four feet high, the bottom slants outwards about eighteen inches, giving that much additional floor space. The board A, Fig. 4, is hinged to the back wall. The prop for closing it is in two pieces, and hung with three hinges. In this way it is quickly opened or closed, or the blinds in the ventilator can be hung on pins and closed or opened by a single lever. The partition between the pens and sheds is eight feet high. The sheds are boarded up between each run for about three feet. Above this to the roof is twine netting, or six-penny wire nails are driven into posts, partitions, etc., about three inches apart, letting them project about half an inch. Binder twine or fine annealed wire is stretched tightly over these nails in the form of netting. The fences between the runs are boarded up like the sheds, and laths used for pickets. This arrangement of pens, sheds and runs will prove the very best for a country where the winters are cold and summers hot. The pens with the large window open to the south give sunlight and warmth in winter. The sheds open to the north give a cool, pleasant retreat in the hottest weather, and by closing the opening through the winter, will keep off the cold winds and make a great difference in the warmth of the pens, besides giving more room for the hens during the more pleasant days of winter.

KEEPING POULTRY IN CONFINEMENT.

THEO. S. SNOW, RHODE ISLAND.

Nearly all of those who write about poultry insist that, for profit and health, fowls must be afforded a wide range and plenty of grass. This discourages many who would like to turn their atten-

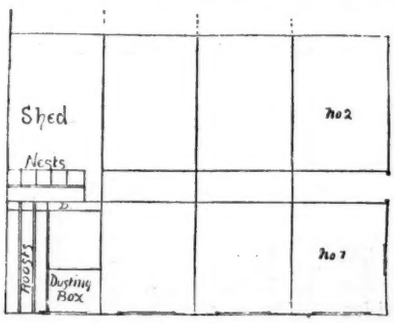


FIG. 2. GROUND PLAN OF POULTRY-HOUSE.

tion to the poultry business, but have only a small space at their command. If they have a garden, or near neighbors, they must confine their fowls, or not keep any. It is also insisted that, though a few fowls may be profitable in partial confinement, many, under the same conditions, will be unprofitable. It frequently happens that, if fifty fowls are in a house where twenty have done fairly well, the owner fails to secure proportionate returns. This, however, does not prove that fowls may not be kept in indefinite numbers with the same ratio of profit and success if the conditions are equal. Here in New England, farmers secure this by scattering small flocks over out-lying fields at considerable distances, giving to each flock a small, portable house. But this entails great trouble in feeding, and does not answer the conditions of the amateur, who must keep his fowls confined. Having had some years' experience and success with confined poultry, I can offer a few suggestions.

First, as to the house. With a space of fifty to one hundred feet in depth north and south, locate the house on the north side of the proposed yards, and let it form the fence on that side. Lay a good foundation below the frost-line, and from eight inches to one foot above the ground, which is so graded as to turn off all water. On this foundation lay sills of three by four inch scantlings, and on these floor-beams, two by five inches, about twenty inches apart, crosswise of the house. A width of sixteen feet is convenient, the

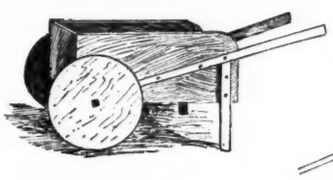


FIG. 3. BARROW.

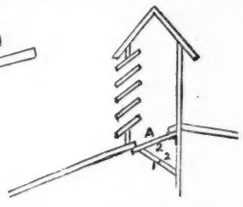


FIG. 4. VENTILATOR.

length to be determined by the number of fowls to be kept, allowing twelve feet of length for every twenty-five fowls. Lay the floor with sound hemlock boards, and put masons' laths under the cracks, to exclude drafts. Lay one also under the middle of every board over six inches wide. A roof with a single pitch is cheapest, and may be covered with shingles, or other roofing, but must be tight. If shingles, be sure to give it plenty of pitch. Let the posts on the lower sides be at least six feet above the floor. Provide four single sash for each twelve feet of house, and one single sash for each thirty-six feet of length for the north side. In inclosing the house, bevel the upper edge of the twelve-inch base-board, and side up with vertical siding of good quality matched and grooved boards, known to the trade as "barn-boards." At one end of the house, arrange for two doors, the width of three barn-boards, which will be about thirty-four and a half inches. One of these doors should be one

foot from the north side, the other five feet from the south side. Before boarding the south side, nail two seven-eighths pieces on each post, and nail a two by four inch scantling from post to post, one-half inch above where the top of the sashes will come. Let these scantlings come out flush with the pieces nailed on the posts, or seven-eighths inch beyond the posts. Then nail on the upright boards, leaving spaces in the middle of each twelve foot compartment for four sashes. Two of these sashes are to be stationary and the other two are to be hinged to them. The bottoms of all are to rest on top of the bevelled base-board. Very little rain will ever get in where the sashes are arranged in this way. Sliding sash are nuisances, where fowls can scratch dirt into the runs, and dampness swell them tight. Next run a partition the whole length of the house, four feet from the north side, making a hall for feeding, cleaning, gathering eggs, etc. This partition is to contain the "modern conveniences." Set two by three inch posts every six feet, and nail a twelve-inch board on the north side, so that the lower edge shall be twelve inches from the floor. Thirteen inches above this, begin and board up to three feet from the roof-beams, and then finish up with yard-wide wire netting, or slats placed three inches apart. Beginning at the floor again, cut a twelve-foot board, twelve inches wide, into two lengths and hinge them to the lower edge of the lowest board. This is to give access to the nests, feed-boxes, and water-tanks. Next take twelve-foot boards, twelve inches wide, and hinge to the lower edge of the second board. This will leave one inch of space through which will project the edge of the shelf beneath the perches. Divide the house into rooms twelve feet square. Set door-posts in line with those of the outer door, board up the partitions horizontally for four or five feet from the floor and finish with slats, three inches apart, or with wire netting. Hang doors in all the partitions. Put in a platform of matched boards, three feet four inches long, twenty-eight inches above the floor, letting the ends project through that spare inch into the hall, for the removal of droppings. In the middle, and beneath each shelf, fasten a twelve-inch board upright, so as to divide the space for food and water from the nests.

Make the nests as follows: Cut seven pieces fourteen by fourteen inches. Nail boards six feet long at the top and bottom, and at the bottom of each side nail strips four inches wide, having first nailed in the division pieces. There will thus, in one piece, be six nests, each twelve by fourteen inches, and fourteen inches high. Place these in the remaining spaces beneath the shelves. Put into each department a shallow box about six inches wide and four feet long, and a tin or iron drinking-vessel. Put into a suitable place from four to six inches of dry earth for a dust-bath. Make wooden buttons for all the doors and hanging boards, and the swinging sashes. A small entrance may be made for the fowls to each room from the yards. It is convenient to have grain-bins arranged in the hall against the outside.

Outside the house, on the west side of yard, build a tight board fence to break the wind, and a light shed on the south side across the ends of the yards; for fowls love shade in the summer as they do the sun in winter.

Having now good quarters, put in good fowls and give them good care. Breed carefully. Every autumn weed out all the unpromising pullets. Keep over enough of last year's hens to give eggs for hatching. The pullets will lay just as well without cocks in their yard, though they are sometimes better content with one. Every summer raise green stuff, such as, rye, oats, lettuce, cabbage, grass, etc. Every week go into each room with two pans, and scrape each perch, and wash it with strong soap-suds; then rub it with a mixture of lard, sulphur, and kerosene melted together. Once a week drive out all the fowls, close the entrances (do this in the afternoon), and put in two or three pans of live coals, on which sprinkle sulphur. In spring and autumn change the contents of the dust-baths and dig the yards all over. Partition off one-half the yard temporarily in September, and sow the south half in rye to let the fowls on again in December. Every care should be exercised against disease, and the hatchet should be used on all very sick ones, while the drooping should at once be removed from the pen. Give fresh water every day, and skim-milk when you have it. Change blood by buying a thoroughbred cockerel every fall. Feed regularly, and get a good sight of every fowl each day. Follow these directions, and failure will be extremely unlikely.

Hatching Under the Hens.—As eggs become plentiful, prices drop. It is best to use all that can be spared for hatching. It will bring profits later, when young chicks command top prices. If hens are used for hatching, experience has shown the wisdom of providing clean, comfortable nests. A dark, out-of-the-way place is the best. A breeder of our acquaintance is now watching over six hundred sitting hens, under each of which thirteen eggs were placed. It requires attention to give such a family of incubators the comforts necessary to make them faithful. A close, steady sitter is the result of providing a clean nest — using insect-powder to keep clear of vermin, which not only make the hen restless, but the chicks, when hatched, are eaten up before they are a month old. Dust the hen under the wings and body before allowing her to sit, and then keep her penned up a day or two.

MILDEW AND RUST IN CEREAL CROPS.

J. J. WILLIS, SUPERINTENDENT EXPERIMENTS, ROTHAMSTED, ENGLAND.

During the past year, many cereal crops of oats and wheat were considerably affected by the scourge of mildew and rust, not only in England, but particularly on the continent. In Stockholm, Sweden, it is reported that mildew almost entirely destroyed the oat crop, and we learn that the disease is attributed in great part to barberry shrubs, and that it is accordingly proposed to extirpate this plant from the neighborhood of farming lands. It has long been supposed, in England, that the barberry had a great influence in the production of mildew, probably from the fact that this plant is very generally attacked by a fungus with rusty spores, called, by scientific men, *Æcidium berberidis*, which are supposed to communicate the disease. Competent authorities are, however, much divided in opinion about the matter.

Many years ago, Professor Henslow contributed an article to the Royal Agricultural Society's Journal "On the Specific Identity of the Fungi producing Rust and Mildew," in which he states that the fact of barberry occasioning some sort of blight in wheat, but more especially mildew, was so forcibly brought before him from several quarters that he was bound to suppose that there must occasionally exist some relation between the presence of this shrub and the occurrence of mildew. An instance is recorded of a field in Oxfordshire, which, when sown with wheat, was generally infested with mildew. On examination, it was found that in the hedge surrounding the field were growing several barberry bushes. These being at some distance from each other, it was discovered that the wheat-straw was more injured in the immediate vicinity of each barberry bush than at a distance.

The bushes were removed from the hedge, and one of the largest plants was placed in the middle of the field of wheat. At the time of harvest, on examination of the wheat where the barberry had been placed, it was found that both the straw and grain, for two or three yards round, were evidently injured by mildew, but not to the extent as compared with the part where the bushes had grown. Some years since, a commission was appointed, expressly to examine this subject, by the Royal Agricultural Society of Lille, France, who, after due examination, came to the conclusion that the matter of barberry infection was not without foundation. We may here state that cereal crop mildew is caused by an attack of parasitic fungus, known as *Uredo linearis;* and rust is produced by a fungus known as *Uredo rubigo vera*, which is believed to be but a further development of the mildew fungus, and there is little doubt but that these diseases are propagated from season to season without to all appearance any intervention of the barberry plant.

Mr. F. J. Cooke, of Lynn, who has unfortunately been obliged to give this subject the closest attention, considers that, under favorable circumstances, the disease is quite sufficiently serious even without a medium. It seems, therefore, that the chief causes of mildew and rust in cereal crops may be attributed to—

1. Cold, wet, and sunless weather.
2. Excess of nitrogenous over readily available mineral plant-food.
3. Thin, or insufficiently established cereal crops at the advent of forcing weather.

Hence, rank manures may be expected to aggravate the disease; as does long feeding with sheep when the weather is wet, and the land sloppy.

The following antidotes to mildew may be mentioned:

1. Clean farming.
2. Amendment of the texture of the soil.
3. Proper drainage.
4. Checking over-luxuriance in the young cereal plants.
5. Avoiding excessively forcing manures, directly for the cereal crops.

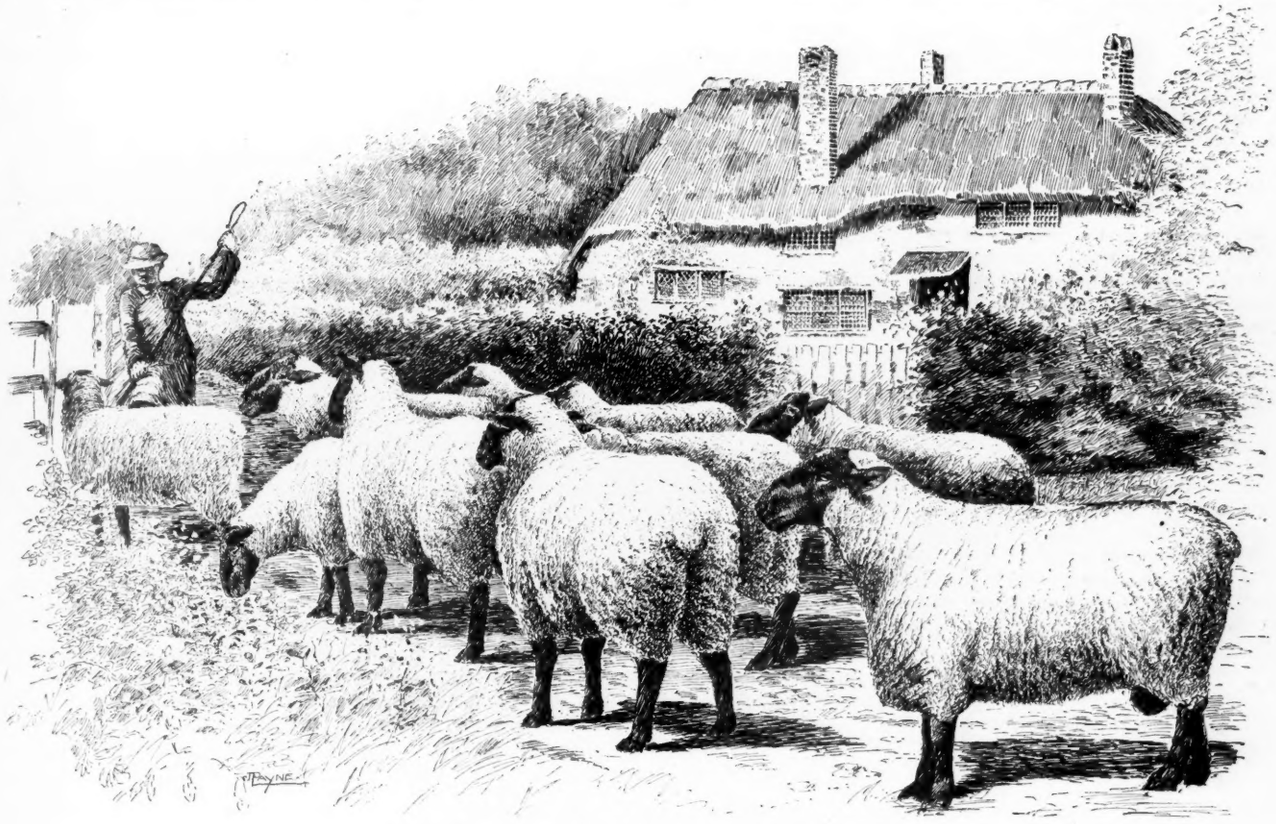
THE SUFFOLK SHEEP.

HENRY LINGWOOD, SUFFOLK, ENGLAND.

The Suffolk sheep, as its name implies, had its origin in Suffolk. The foundation of the breed was laid about one hundred years ago by a cross between the original Norfork horned ewe and improved Southdown rams. The Norfolk sheep (now extinct) were noted for their activity, longevity, prolific breeding, and success as nurses; the Southdown for its good type and early maturity. The amalgamation of the form and fattening properties of the Southdown with the hardy, prolific, and highly-bred Norfolk resulted in the production of a valuable type of animal, combining the best qualities of its progenitors, and now recognized as the Suffolk sheep. The breed has been cultivated with great care. Some of the existing flocks date back to 1810. The Suffolk Sheep Society was established in the spring of 1886 for the promotion of the purity of the breed; at the present date about ninety registered flocks are established in Suffolk, Norfolk, Essex, Cambridgeshire and Bedfordshire. Flock prizes are competed for, yearly, for the best and most uniform flock of ewes, rams, and ewe lambs, the property of one owner.

The Suffolk sheep may be described as about thirty per cent larger than the Southdown, with black, glossy face, hornless, and clean black legs, long back, with well-developed legs and loins; wool of fine texture, thick, and of moderate length. In the Report of the Judges of Wool exhibited at Windsor, 1889, R. A. S. E. Journal, Vol. 25, Page 2, it states: "Class 18, Suffolk. It is a pity there were not more entries in this class, which is likely to take an important place in the wool trade of the future." The breed is noted for its fecundity; thirty to thirty-five lambs for every twenty ewes being a frequent average. The ewes are excellent nurses, and live longer than other breeds. Ewes frequently remain in the breeding flock until they are ten and eleven years of age. They are extremely hardy. Their comparative freedom from foot-rot enables them to travel over large tracts of heath-land where they have to roam for their food, but they thrive equally in the enclosed and more productive country where they are confined in hurdles. The mutton is of the finest quality and commands a ready sale. It is of high value, consequent on its venison-like flavor and the small percentage of fat compared with some of the other heavy breeds. They mature early, if well grazed and fed, and are fit for the butcher at ten to twelve months old. In competition with other breeds, they have on several occasions been awarded the first prize at the meetings of the Royal Agricultural Society. In the Report on the Exhibition of Live Stock, at Newcastle (R. A. S. E. Journal, Vol. 23, Page 12), Mr. J. Macdonald states: "The Suffolk breed makes an important addition to the recognized English breeds of sheep. They possess properties which are sure to gain a good name." Suffolk ewes and rams have been exported to Austria, France, Germany, Russia, North and South America, and the English Colonies.

[Our illustration represents a flock of Suffolk sheep owned by Mr. Lingwood, the animal in the foreground being a shearling prize ram.]



FLOCK OF PRIZE SUFFOLK SHEEP.

SWEET-POTATO CULTURE.

DICK NAYLOR, TEXAS.

Sweet potatoes are planted on ridges well thrown up with a turning-plow. Four rather deep furrows will be sufficient. In the South, where we have only a patch of one or two acres, we generally draw up the soil with a weeding-hoe, after plowing it, thus making a higher and smoother ridge. Sandy loam is the best soil for sweet potatoes, and well-rotted stable manure the best fertilizer. Ashes are highly recommended by many, but my experience does not justify this opinion.

Transplanting.—When practicable, it is best to draw the slips or plants from the bed and set them out on the afternoons of rainy days during May and June. Yet we often transplant as late as the middle of July, in the South. It is better to transplant upon freshly prepared ground, where the ridges have been thrown up the same or the preceding day. The slips should be six or eight inches long, and dropped a foot and a half apart. With the hand or a paddle scoop out a hole four inches deep, place the plant in it, and press the soil well around it. Sweet potatoes are quite tenacious of life, and, if the earth is moist and they are transplanted in the afternoon (the work of setting out being well done by firmly pressing the earth around the plants), very few will die.

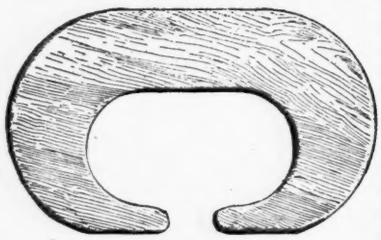
Planting in Dry Weather can be, and often is, done with success. It sometimes occurs that the potato-bed is covered with good plants and the rain fails to come just when needed for setting them out. In that case, they can be set out anyhow, if proper care is observed. We have one or two extra hands to carry buckets of water along the rows and pour into each hole made for the plant

from one pint to a quart. The man who is setting out plunges the plant into the mud thus formed, draws the dry earth around it, and presses it firmly down with his hands. This mode of planting requires the extra labor of hauling and applying the water, yet, in protracted "dry spells," it is labor well expended.

Cultivation.—Sweet potatoes do not require a great deal of cultivation, as the vines grow so rapidly that they soon cover the ground, to the utter exclusion of weeds and grass. Some good farmers never plow them at all, and only give them one or two good hoeings. This mode of culture will do on new ground or land that is not already seeded with grass and weeds, but it is generally necessary to plow them once or twice, following each plowing with a thorough hoeing. A shovel plow is generally used for this purpose.

NOSE-BOARD TO PREVENT SUCKING.

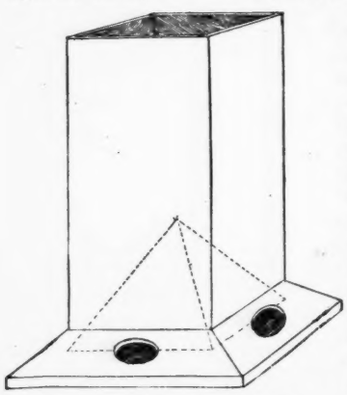
When growing calves are allowed to run together, they often acquire an injurious habit of sucking one another, and still more serious in its consequences is the trick, which some cows have, of self-sucking. A very easily-made and effective restraint on such animals is the wooden nose-jewel, depicted herewith. It is made of pine or basswood board, half an inch thick for calves and three-quarters of an inch for older animals. To shape the implement, two holes, an inch in diameter, are bored, a narrow notch sawed in the side to the holes, and then with a knife the whole is finished off and the points rounded, as shown in the engraving. The notch between the points is made just wide enough to allow the contrivance to slip snugly upon the cartilage between the nostrils of the animal that is to wear it. When properly adjusted it does not interfere with grazing, but is an effectual barrier to obtaining surreptitious supplies of lacteal fluid.



NOSE-BOARD FOR CALVES.

DILLER'S PIG-FEEDER.

Of the many inventions for feeding stock there is none of more utility than a simple contrivance invented by a breeder of Poland-China swine, Mr. A. C. Diller, Marshall Co., Iowa. There is no patent on it, and any farmer may make as many as needed. It consists of an open-ended box, twenty inches square and three and one-half feet deep, with a notch two inches deep and five inches wide in the middle of each side at the bottom end. The bottom is thirty-eight inches square. Inside is a pyramid fourteen inches square at the base and sixteen inches high, fastened on the center of the bottom. The box is set over the pyramid with the notched end down. Strips two and one-half inches wide are fastened on each edge of the bottom. Eight blocks of board, nine inches wide and one and one-half inches high at one side and six inches high at the other, are set one at each side of the openings from box to trough. They should be eight inches apart and form the ends of the feed-troughs. The covers are each made with a circular hole six inches in diameter, and reach from the strips on the outer edge to the box. In order to make the ground feed settle with regularity into the troughs, a strip of hard wood about seventeen inches long is fastened to the top of the pyramid on each side and reaches into the trough a little. This strip will vibrate back and forth, being fastened with a small bolt or screw, and cause the feed to drop slowly into the troughs whenever the pigs try to clean out the corners. No waste feed when this box is used. Shelled corn and oats can be successfully fed in this way.



A SERVICEABLE PIG-FEEDER.

Two Hundred Bushels of Corn Per Acre.—I expected to raise this amount of shelled corn on my prize acre last year. It had been manured very liberally on the surface, and forty bushels of lime and about four hundred pounds of fertilizer had been strewn in the row and worked in by having a chain dragged in the furrow. It was plowed early, turning a sod. It was thoroughly drained by ditches three or four feet deep and about twenty feet apart. Rows were marked off twenty-eight inches apart, and planted with the Mammoth yellow corn, dropping one kernel every six inches in the furrow, and thinning so that the stalks stood six inches apart. The corn was up and looked very prospering, but a disastrous flood, May 31, with two others at intervals of about two weeks, washed over most of the acre and carried off much of the fertilizer and surface soil. Then, after the crop had begun to ear, a storm broke many of the stalks, so that they made no crop. The rain and wet weather also prevented the proper cultivation, and it was only plowed and hoed twice. Yet the yield was extra good, being upwards of 122 bushels of shelled corn on the acre. To grow an extraordinarily large crop of corn requires very rich land, deep plowing of the sod or sub-soiling, and good cultivation. The land must also be free of surface water, and the crop uninjured by frost and storms. ELISHA BROWN, Baltimore Co., Md.

A PLACE FOR EVERYTHING.

The accompanying engraving shows a cabinet for keeping small tools and other articles, which every farmer should always have at hand. A good size is four feet high, three feet wide, and one foot deep. If wanted to close and lock up, make two doors with side casing three inches deep. This will furnish a good place for hanging saws, square, etc. The fronts of the drawers are made as shown in the engraving, rabbeted on end and bottom, the whole put together with wire nails. Small knobs can be found at hardware stores. The sides, top, and principal divisions of the case and fronts of drawers are of seven-eighths stuffs. The body of the drawers and rest of the divisions may be of three-eighths lumber; or old cracker boxes, to be had cheaply of the grocer, can be utilized. Of course, it is not necessary to make it exactly on any given plan, although the sizes of drawers shown herewith will be found about right. Paint the front of the drawers in two coats of some bright color, the partitions of a contrasting one, and put the letters on with a small quill brush and ivory-black thinned with japan.

CONVENIENT CABINET FOR SMALL TOOLS.

CARE OF MILK IN CHEESE-MAKING.

H. B. UNDERHILL, NEW YORK.

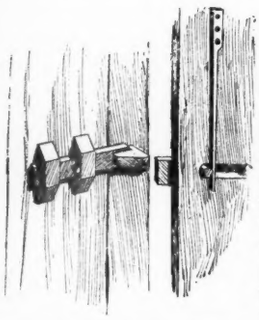
Good cheese depends upon good milk. An expert maker can produce passable cheese from ordinary milk, but it lacks the peculiar flavor and keeping qualities of a first-class article. He is obliged to develop so much acid to kill the gas and taint, that the oils and butter fats which give the fine flavor are destroyed. More milk is consequently required for each pound of cheese, involving direct loss to the farmer. The bacteria that spoil milk are so small that thousands of them occupy a space no larger than the point of a needle, and multiply so rapidly that millions are produced from one in a short time. Milk is especially adapted to their growth, and a small quantity will furnish food for their rapid development. They adhere to the surface of vessels that have contained milk with this fact in mind. The necessity for thoroughly cleaning is apparent. It has been shown that no amount of washing, in cold or warm water, will remove all the bacteria. It is necessary to use boiling water, and let it stand in the vessels for a short time. This will destroy the active forms. Too much care cannot be exercised in scalding all implements used in the dairy.

Another question is: How shall we care for the night's milk in order to secure best results? Some cool it; others aerate it. The farmer is generally inclined to cooling, as it is the easier, and the milk will not sour. It has been shown that the animal heat in the milk, when it is drawn from the cow, has no connection with the animal odor. If the milk is cooled with ice the heat is reduced, but

the taste of the milk reveals the presence of the animal flavor, and the odor will reappear when warmed. There is only one way by which milk can be properly cooled for cheese. That is by exposing it to the air until its temperature is the same as the surrounding atmosphere. The duty of the cheese-maker is to give the producer the necessary information and co-operate with him, that a perfect milk may be produced. The producer should follow the advice carefully, as it would largely increase his income.

BARN-DOOR FASTENING.

Professor Samuel E. Rusk, of Claverack College, sends us a sketch and description of the device for fastening a barn-door, which is illustrated herewith. It consists of a wooden bolt, playing loosely in two wooden guides. A pin of tough hard-wood, two and a half to three inches long, is firmly driven into the bolt, and extends through a transverse slot in the door. On the inside of the door is fastened a spring of ash or hickory, with its free end resting against the pin. As the door is closed, the bolt catches on the wooden fastening driven into the opposite door-post, and is held there by the spring inside of the door. This is a very simple contrivance, but it is none the less valuable. A bolt on the barn-doors is always in place. Even where honesty is the rule, it is better to lock the door before the horse is stolen.



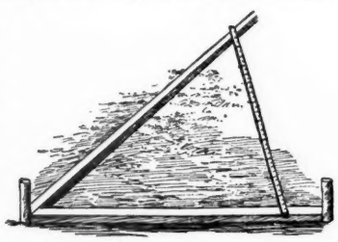
SECURE DOOR-FASTENING.

USES FOR A TEN-FOOT ROD.

Among the things which are found convenient in every farmer's work-shop is a ten-foot pole, made thus: A piece of wood, one and a quarter inches square and ten feet long, is nicely smoothed with the plane, and then marked as follows: One side has a mark every three feet, to indicate yards; another side is marked every two feet; the third side is marked every foot; while the fourth side has feet, inches, and half-inches, the pocket-rule furnishing the smaller subdivisions of an inch. This measure will be found useful in many places. For instance, when a small building is being started, stakes are set in the ground at each corner. The proper angle of the sills may be found by measuring eight feet on one, and six feet on the other. Bring them together until the ten-foot pole just reaches both marks, as in the engraving, and a right angle is the result. Again, the proper length for a post, to support a low roof, is quickly measured with such a pole. If a corn-crib is being built, six feet wide at the bottom, seven at the top, and nine feet high, the proper length of the various scantling is readily measured off. Many other uses will be suggested when this simple implement is at hand.

PUBLIC SALES DAYS FOR FARMERS.

A general sale day, held at the county seat or central important town of each county, at regular intervals, is of so much value to the agricultural community that the practice may well be more largely adopted. In Madison county, Ohio, which is largely engaged in stock-feeding, a stock sale has been held at London, the county seat, upon the first Tuesday of each month, for a great many years. It has come to be recognized as the great day for barter and sale, and never fails to bring a large gathering of men and merchandise into the town. By the middle of the forenoon, the auctioneer takes his place in the public square, and for hours horses, mules, cattle, sheep, and swine go under his hammer singly, and in lots, the sale closing up oftentimes with a miscellaneous assortment of merchandise in the way of second-hand wagons, implements and utensils which the owners desire to exchange for cash, or its equivalent. In another county of the State, in which was a nearly total failure of the corn crop in one portion, while another portion rejoiced in an excellent harvest, a corn market was held every Saturday on the square at the county seat, where buyer and seller came together without the intervention of the middle-man.



UTILIZING A TEN-FOOT ROD.

In Kentucky, county-court day is the universal sale day, and the "court" is followed from place to place by traders and drovers. Where such sales are not now held, farmers' clubs would do well to take the matter in hand and try them as an experiment. The advantage of having a market in which any product of the farm can be sold at once, or where one may go to "stock up" when they wish to buy instead of sell, is so great that when such sales have once been inaugurated they will rarely be discontinued.

HEDGE AND BARBED-WIRE FENCES.

FRED GRUNDY, ILLINOIS.

The Osage orange is extensively used for division- and yard-fences, and, when properly set out and cared for, it makes a cheap and good hedge. In some parts of Illinois there are miles of Osage hedge to rods of any other kind of fence, and, where kept well trimmed, they give satisfaction. The chief objection to Osage hedge as a yard-fence is that hogs will work under it to find a cool place. They rub and break off the lower branches, and eventually make gaps, through which they escape into the fields or neighbors' lots. To prevent this, the sharp, spiny shoots, cut from the top, are piled against the base of the hedge. But this soon becomes dry and brittle, and is quickly rooted out and pushed aside, so that almost constant watchfulness on the part of the owner is necessary to prevent the hogs from working through.

Eight years ago a friend called my attention to the hedges around his hog-lot, which were rubbed off smooth, and so full of gaps that he had been obliged to take his hogs out, and asked me to give him a hint or suggestion toward remedying the matter. I advised him to cut the entire hedge off close to the ground, leaving stumps thirty inches high, about six or eight feet apart, then fasten to these stumps three galvanized barbed wires, the lowest six inches from the ground, the second eight inches above that, and the third twelve inches above the second, as shown in Fig. 1. This was to be done in February or March and the hogs kept out until autumn. This was done, and the hedge-roots sent up a perfect thicket of

FIG. 1. THREE-WIRED FENCE.

shoots on both sides of the wires, completely locking them in. In June these shoots, then four to six feet high, were cut off to three and a half feet in height and the sides trimmed up until the hedge was eighteen inches wide. The latter part of August the hogs were turned in, and the yard has been occupied by them ever since. In places the hedge is rubbed smooth off to the wires, but no farther.

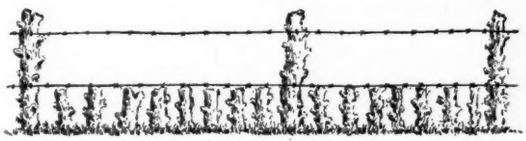


FIG. 2. TWO-WIRED FENCE.

In all of those eight years not a pig, large or small, has escaped from that lot, and the fence will apparently remain "pig-tight" for a lifetime. It is trimmed regularly twice a year, the first time in June, and the second any time between November and March.

The hedge around a pasture had given the same farmer some trouble. He cut it off evenly to a height of two feet, leaving strong stumps four feet high, six to ten feet apart. To these he stapled two barbed wires, eighteen inches apart, as shown in Fig. 2. Within a year thereafter the fence was bull-proof, and it is likely to remain so for an indefinite period.

There is nothing that surpasses Osage and barbed wire for making a perfectly safe and permanent fence—one that is absolutely stock-proof, and will continue so as long as it is properly attended to. Where the Osage orange does not succeed, barberry, willow, or Siberian crab will serve the purpose. The wires may be fastened to small posts, if necessary, which will hold them until the trees or bushes lock them firmly in.

THE ARMY HORSE AND INDIAN PONIES.

GEN. JAMES S. BRISBIN, U. S. ARMY.

The government of the United States keeps in service ten regiments of cavalry and five regiments of artillery, and yet has no distinctive kind of horse for either cavalry or artillery. It picks up its mounts wherever it can find them and takes whatever it can get for the money paid. The cavalry regiments consist of twelve troops of sixty-five men each, a total enlisted strength of 7,870. The artillery has ten light batteries of sixty-five men each. There are perhaps in use in the whole army of the United States some seven thousand serviceable horses. The price paid by the government for a cavalry or artillery horse is from $118 to $140. Of course good horses, or the best, cannot be had for so small a sum. The officers' horses are little better than those of the enlisted men, for the reason that if the horse is lost the government will not pay for him, or, if it does, only the regulation price is allowed, $125. Officers generally go poorly mounted, and, when they take the field, ride a government horse, leaving Uncle Sam to stand the loss in case the animal dies, or is killed in action. A few officers are superbly mounted, but they only use their mounts for reviews, dress-parades, and to ride out with the ladies, or for driving. Many efforts have been made to induce the government to increase the allowance for service-horses, but in vain, and I suppose we shall go on for a long time yet riding scrubs. One hundred and fifty to one hundred and sixty dollars, say old army officers, is as cheap as the government ought to expect to buy its horses for service in the army, and this would seem reasonable. The size ofthe army horses is about fifteen and one-half hands, and the weight 900 to 1,000 pounds. A short-bodied, strong-limbed horse is generally preferred, and long-coupled and slim-bodied horses are now generally avoided. There was at one time a great fancy for tall, long, legged, and rangey horses, but this has passed, and the chunky, chubby horse has come to stay in the service. Some of our officers like the Montana and Colorado broncho, and we are now buying some of these for this regiment (1st U. S. Cavalry). I admit their toughness and powers of endurance, but I dislike their treachery and unreliability. No broncho is ever so thoroughly broken that you can trust him. He may appear all right, and act right for months, but let anything unusual occur, or the stress be great, and he will ignominiously fail you just at the moment when you need him most. Suppose a troop of fifty men were dismounted to fight on foot, and should be driven back and required to mount and get out of a bad place in haste? If they were mounted on bronchos, five in every ten would go to bucking and refuse to let the troopers mount at a critical moment. The result would be, the enemy would capture or cut them down. The broncho is the Indian of the horse kind, and as treacherous as the red man with which he is associated. I do not believe any broncho was ever yet the friend of the white man, or ever will be. Yet I have seen this beast in his wild state, and his powers of endurance have surprised me. Every one knows what the Indian pony is, and his vast and wonderful capabilities. Ugly, rough-coated, shaggy, and often a mere walking skeleton, he will go sixty to seventy, and often eighty to eighty-five, miles in a day, with a heavy Indian on his back. Then he will be turned out without feed or care to rustle for himself, and be ready for a seventy-five or eighty-mile journey on the morrow. How often have we cursed the toughness of this little beast, as day after day we wearily followed the Indians through long campaigns. I remember, in 1877, following Lame Deer's band, mounted on these ponies, for twenty-two days and nights, and although I had plenty of troops and often headed them off and turned them back, still, lighten up and march as hard as I would, I could not overtake them. It was at last merely by accident that I broke them up in their camp, but even then I never got a single Indian pony or a buck, for they easily rode away from our best cavalry companies.

FIG. 1. U. S. CAVALRY SOLDIER ON BRONCHO, READY FOR THE FIELD.

I can relate some interesting examples of the hardihood of Indian ponies. One evening, just as the sun was setting and the evening gun had been fired at Fort Sully, a Sioux Indian, mounted on a pot-bellied, scrawny-skinned, splay-footed, matted-haired, sorry-looking, calico-colored Indian pony rode into the fort bearing a letter from the commanding officer at Fort Hall to the adjutant of Fort Sully. On looking at the date and time, the adjutant of Sully was surprised to see the letter had been written on that morning. The posts were 104 miles apart, and he could not believe the messenger had come through in one day; on questioning the Indian, however, such proved to be the fact. The Indian said he had left Hall just at the first call for reveille (daylight) and had ridden through to Sully, 104 miles, in thirteen hours. Much of the road was rough, over mountains and through sage brush, where there was hardly a trail. The officers were greatly surprised, and to this day talk of this ride as one of the most wonderful ever made in the world. The pony that performed this great feat was not worth over forty dollars, as Indian ponies go. During the campaigns of General Stanley, a scout of his command named Corse, who rode an Indian pony, was sent on a mission and traveled over three hundred miles in four days. He used only the one pony, and went straight across the country over one of the roughest and most God-forsaken regions in the United States. Often he climbed up steep mountains, swam rivers, plunged through gullies and fell into gopher holes, but the tough little beast he rode bore him on and on to the end of the journey, and even then did not seem much used up.

Colonel Richard I. Dodge, one of the oldest and most experienced officers in our service, said he once saw an Indian pony in the hands of a white man, and offered him forty dollars for it. The man looked at the Colonel for a moment with contempt, and then said the price of the pony was six hundred dollars, and not a cent less would buy him. Curious to know how so common a looking beast could be so valuable, he made inquiry and found out that the owner was an express-rider between Chihuahua and El Paso, nearly three hundred miles. He used only one pony, and made the

trip in three days, usually lying by all day, and traveling only at night, for fear of Indians. He would start on Monday night and get into Chihuahua on Thursday morning; then he would rest until the next Monday morning and ride back to El Paso in three nights. For each trip he received one hundred dollars; so the little beast was well worth all he asked for him. He had been carrying the mail in this way, he said, on the same pony for six months, and when Colonel Dodge saw him the little horse was in such fine condition and so full of fire as to attract the Colonel's notice and cause him to wish to buy him.

General Miles, when he wished to use up Sitting Bull, mounted his regiment, the 5th U. S. Infantry, on captured Indian ponies, and from that day Sitting Bull was a doomed man. Go where he might, the 5th Infantry, on their wiry little ponies, was after him. They swept the plains, swam rivers, passed through summer's heat and winter's cold, proving a Nemesis to Sitting Bull, striking him and his villages when they least expected it, and so worrying him that he had to leave the country and seek refuge in the British possessions. It was on these ponies Colonel Ilges crossed the plains in winter, in 1880-81, and struck Sitting Bull on the Missouri. I had some of Miles's 5th Infantry companies, mounted on ponies, with me in the chase after Lame Deer, and I can testify to their wonderful endurance. I have been at some trouble to trace the origin and history of the Indian pony, so far as it can be found. There is no doubt but that they are descended from the Spanish horse. I think Cortez and his followers brought them over from Spain about 1518. We know that he had horses, and that some of Cortez's followers were mounted on Barbary steeds. There is no trace of the Spaniards ever taking their horses back to Spain, but, on the contrary, Ballantyne says they were turned out in the mountains and allowed to run wild, as the superstitious Mexicans would not touch them. I can find no trace of horses among the Indian tribes of the South and West until 1780. The whites first speak of them in 1789, and they were first traded to white men in 1796. These animals were the same Indian ponies as those of to-day, and I have no doubt but that they came from the horses brought over by Cortez and his followers.

FIG. 2. U. S. CAVALRY SOLDIER ON AMERICAN HORSE READY FOR INSPECTION.

The broncho was produced by crossing the American stallion with the Indian mare pony. In my opinion this is all wrong. Generally, the viciousness is with the mother. The Indian mare is the sum total of utter cussedness in horse-flesh, and she naturally imparts her temper and habits to her foal, giving the broncho his ugly disposition. On the other hand, the Indian stallion is not so bad, and frequently quite a well-disposed fellow. If he were bred to the American mare, I think we would get just the horse we want for cavalry purposes, and to export for use in the armies of Europe. While such a cross would preserve the sire's strain of blood for his colts and give us the larger and tougher beast we require, he would not impart to his offspring the ugly and vicious temper that seems to afflict the females of his tribe.

Fig. 1 is a typical picture of several bronchos now in use in this regiment (1st Cavalry), in companies serving at Fort Assinaboine. Fig. 2 is from a photograph of the common American horse now used in the army, a good, honest fellow, but too slow, too heavy, and too tender for cavalry use, or to catch Indians with.

Those bronchos are Montana-bred, and cost the government $118 each. While I do not like the broncho bred from the Indian mare, I am sure he is the coming animal, and, if the breeding is reversed, I believe we shall get just the horse we want for riding, driving, for cavalry service, and to export for use in foreign countries, and especially the armies of Europe.

BURNING OF HORSES ALIVE.

A. B. ALLEN.

It is astonishing how often we hear of valuable horses perishing in burning barns. The losses by such calamities amount usually to hundreds of thousands of dollars. In addition to this, the frightful sufferings and agonies of the poor creatures are indescribable. With proper care in placing and building stables, and their subsequent management, fires in them would scarcely ever occur. For a single valuable stallion, or several, the stable ought to be fire-proof—really so—not a bit of wood attached to it—and that part of it which holds the hay or any combustible matter should be partitioned off with thick sheets of iron and an iron door from the part where a stallion stands. No other light except a safety lamp should be used in the stable, and it would be best to hang it up on entering, at a suitable distance from the manger and stall, so that if it should drop, the flame could not reach the hay in the rack or the litter in the stall. No groom or person who smokes should be allowed to enter the stable. Notwithstanding their promises not to do this while there, they sometimes forget themselves, entering with a lighted cigar or pipe. On this being brought to mind, they quickly pull it out and thoughtlessly throw it down, perhaps on the litter, and thus set this on fire. The stallion stable ought not to be near to any wooden building or hay stack, which in case of a fire could heat it sufficiently to endanger the horse. Not over twenty mares ought to be in one building, and it would be all the better, and even cheaper in the end, if this were also built fire-proof. For a greater number of mares, let separate stables be built and placed at suitable distances apart, so that in case of fire in one it would not spread to the next. Water, with buckets and hose, should be kept close by, and an engine that two men could easily handle. Have two faithful men sleep in each barn with a watchful terrier dog, that would rouse them if both happened to be asleep, in case of danger from any cause. Only one of these men should sleep the first half of the night, and the other the latter part; and, when up, let each from time to time take a turn in front and rear of the mares to see that nothing is going wrong among them. It would be best for each mare to have a roomy box-stall. If this

could not well be provided, then let two be made, so that in case of accident or illness there would be comfortable quarters for such to be placed to cure. If hitched in stalls, there are fixtures for this which will instantly unhitch a considerable number by a single, easy turn of a lever. Doors ought to be placed in the side of the stable behind the mares every ten feet or so, in order that when unhitched they could be turned out and keep clear of the fire. If any one of them hesitates to instantly march out through the door, then strip off its blanket and throw this over the head and eyes so it could not see, and she would then be willingly led out and stand for the blanket to be taken off and then walk clear of the fire.

THE CULTURE OF SILAGE CORN.

JOHN GOULD, OHIO.

The great attention and inquiry from every State in relation to silos and silage has made the culture of the crop one of great importance. The whole subject is one that needs careful study. To secure large crops of best feeding value is desirable, for, the larger the crop, and the more nutritive qualities it possesses, the greater the profit. The silo in itself is suggestive of increased productiveness, as it offers a cheap and greatly improved method of preserving these heavy crops, and in a way never before approached, both in economy of food elements and security against loss.

The kind of corn best adapted for the purpose must of necessity vary with locality. For the great corn-growing belt, the white corn of Virginia, known as the "B. & W.," must be a standard variety, owing to its vigor and great growth of foliage, and, if planted as it should be, very thin, its product of ears is remarkable. This corn has remarkable drouth-resisting power, and on a clover or rye sod can be counted upon, with good care, in producing a full average crop, which is of great value in itself. This Virginia corn, known there as White dent, is particularly rich in starch. For the purpose of silage-making it is superior, as it is not, when grown to maturity, liable to take on by fermentation an undue amount of acid. This corn is different from the white corn, known as the "Soo," which is a gourd-seed variety, and takes much longer to attain maturity. It is very liable to failure in the North from this very cause, and its failure is charged upon all Southern corn alike, because all Southern white corn is, without knowledge on the subject, classed as one variety.

Silage corn, whether Southern or the most luxuriant Northern kinds, should never be planted in greater amount than eight quarts per acre. Then, if on good soil, the function of the corn plant—to produce grain—is not interfered with, and we have not only full developed growth of stalk, but ear-growth, which calls for the full power of the plant. Thin planting is very essential in obtaining a full share of sunshine and air.

The writer has obtained the best results in silage-corn growth by planting early on a fresh-turned rye or clover sod. The ground should be made very mellow and fine, for at least five inches deep, so that after the corn is planted there will be no further need of deep disturbance of the soil. The corn roots have a fine mellow seed-bed that furnishes them with the requisites of growth, and need only shallow culture to keep down the weeds, and a fine mulch of soil to prevent as much as possible the escape of moisture. The best distance to plant drills of silage corn is three feet eight inches apart, dropping one kernel every six or seven inches in the drills. The planting is done with a rotary single planter that has a small iron roller or following wheel, which compresses the soil over the corn, and depresses the row about an inch below the level of the surface. I drag this corn once before it is up, again as it is coming up, and three times afterwards, if possible. This slight depression in the planting marks makes this matter of dragging one of safety to the corn, and later on, when it is larger, it does its own dodging the drag-teeth, and not one in one hundred plants is injured to the extent of killing. This dragging is of great value, as it almost wholly exterminates the weeds and foxtail grass, and if, later on, when the horse-hoes are started, they are set to run, not to exceed two inches in depth, so as not to bring up fresh supplies of ungerminated weed-seed to the surface, the luxuriant growth of the corn will so overshadow the few weeds that do appear that they only make a sickly growth at best.

Silage corn should never be cultivated so deeply as to mutilate the roots. Those of this Southern corn persist in growing close to the surface, and to cut them off by deep cultivation is to check its growth for several days, which makes a telling difference in the fall, when it is desirable to have the maturity that is now deemed so esential in securing good silage. This matter of shallow cultivation is as fully illustrated in its benefits to our Northern varieties, and can be avoided, if thorough and extra attention is given to the preparation of the soil before planting. Then the greater part of the cultivation can be preformed by the use of a wide-running, slant-tooth harrow. I found, last year, that by this harrow and a double-gang, spring-tooth cultivator, that five and one-half hours per acre gave me full and satisfactory cultivation after planting.

It is of great benefit, and a most perfect weed annihilator, to sow rye among the silage corn at the last working, at the rate of two bushels per acre. It takes possession of the ground, and, as soon as the corn is cut, springs into a growth that outstrips the weeds, and in the spring gives them no chance. Then clover-seed can be sown among it, and the rye cut off for hay early in June, or in the first days of May. It can be turned under, and its decaying remains under the furrows give the corn plant a food that is a close approach to clover in its best estate, and performs an office that, if the silo-man will avail himself of it, will put money in his pocket that has cost but very little "sweat of the back" to obtain.

SHEEP-RAISING IN THE SOUTH.

FRANK L. WELLS, ALABAMA.

The South is not known as a wool-growing section, and yet its natural advantages for sheep-raising surpass those of any other section of the country.

Hon. W. B. Juge, of Hale county, Ala., reports the following result obtained from a small flock of sheep:

	DR.	CR.
Eighty-five sheep at $2	$170.00	
Shears	1.50	
April 1, 220 pounds wool at 12 cents		$26.40
September 1, 222 pounds wool at 18 cents		39.96
Fifty-five lambs at $2		110.00
	$171.50	$176.36

He had more than realized his original investment, and had his capital intact. This is not an exceptional case; a profit of $2 a head on sheep is not uncommon in this section; and yet but few have ever turned their attention to wool-growing. The principal reason for this is the inadequate protection furnished by the laws of the Southern States. Dogs are allowed to run at large, and the class of hounds kept are especially adapted to sheep-killing. Until very lately, it was thought that a farmer could not get along without from one to a dozen dogs. But that idea is fast passing away, and, as it dies out, sheep-raising increases. It has only been a few years ago since a legislator from Greene county, Tenn., who had represented that county for many years, voted in favor of a law against dogs. When he went home, dead dogs began coming in, by freight and express, securely boxed up. Dead dogs were everywhere; his front yard was strewn with them, and every morning he had to have them carted away. He died soon afterward, and physicians claimed that the cause of death was the worry occasioned by the reception accorded him by his angry constituents.

But the advocates of dogs are decreasing in numbers, while the advocates of sheep are increasing, and the South bids fair to be the wool-growing section, which its climate, hills, and grasses fit it to become.

Care of Ashes.—Statistics of insurance companies show that the cause of an astonishing number of fires in country places is carelessness with ashes. In localities where wood is still the fuel, every one knows that covering a few live coals with fine ashes will preserve fire for a very long time. Live coals, covered in ashes in a wooden ash-barrel or bin, will keep fire as long as in the fireplace, and their presence not rarely manifested by the burning of the barrel and the shed that contained it, if no greater loss result. Wood ashes are in themselves of sufficient value to warrant care in keeping from becoming injured by exposure to the weather, and at a distance sufficient from buildings to prevent any possible danger. Ashes should always be taken up in iron vessels. The best ash-house we have seen was built of brick, and covered with an arch of brick. An opening was left in one end for the introduction of ashes, and another at the ground level, closed by an iron door, for the removal of the contents. Better let the ashes go to waste than to try to preserve them in any shed or other out-building connected with the dwelling. Coal ashes are worth very little as a fertilizer, but they are worth saving. They should be sifted daily, and the cinders and the fine ashes saved separately. The cinders as a foundation, to be covered by the ashes and rolled, make a most excellent path, or road. Their mechanical action upon stiff, heavy soils is beneficial.

CASTOR-OIL BEAN CULTURE.

PROF. J. W. SANBORN.

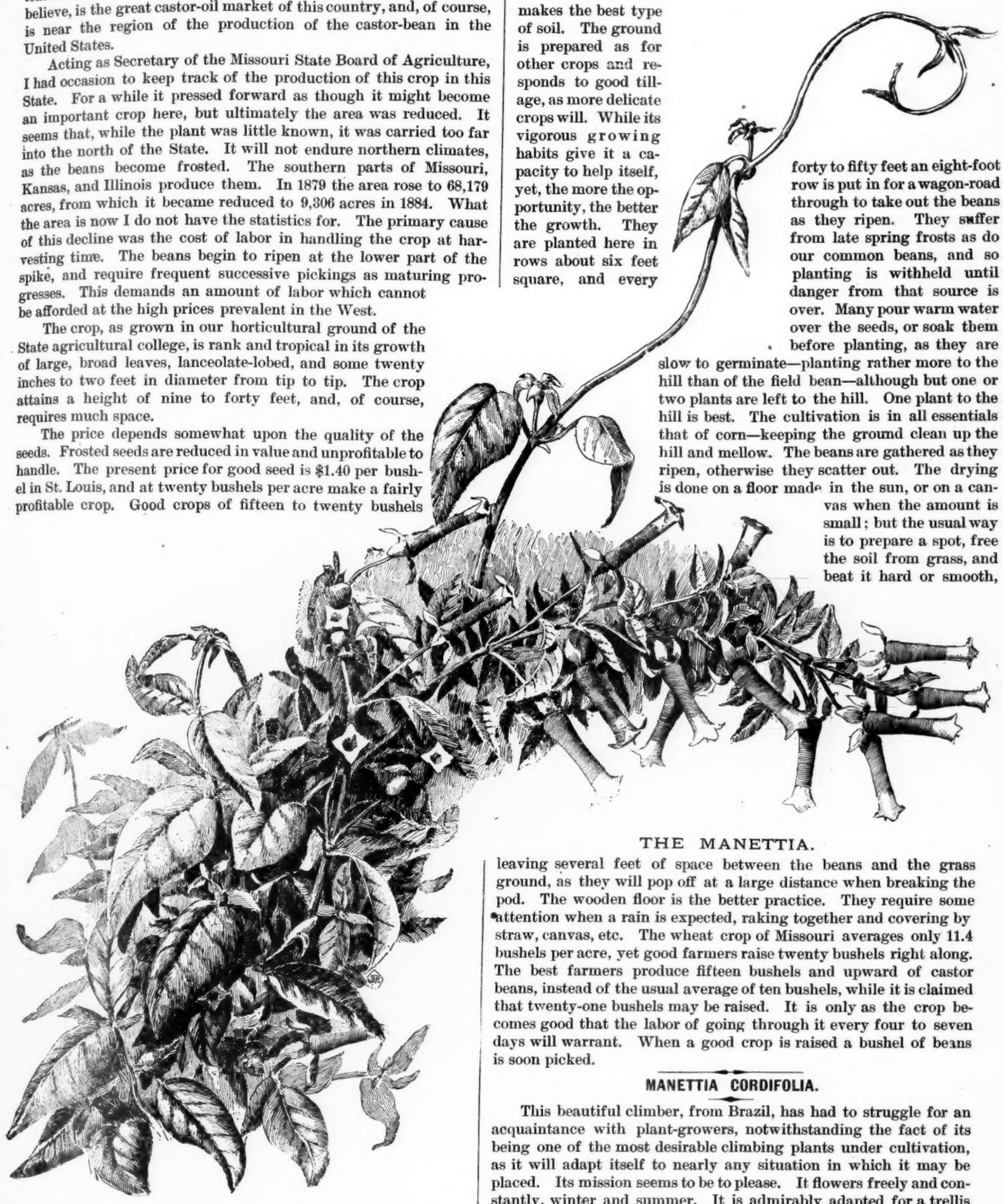
The castor-oil of commerce is derived from what is known as the castor-oil plant (*Ricinus communis*), probably a native of tropical Africa, but now naturalized in several countries. St. Louis, I believe, is the great castor-oil market of this country, and, of course, is near the region of the production of the castor-bean in the United States.

Acting as Secretary of the Missouri State Board of Agriculture, I had occasion to keep track of the production of this crop in this State. For a while it pressed forward as though it might become an important crop here, but ultimately the area was reduced. It seems that, while the plant was little known, it was carried too far into the north of the State. It will not endure northern climates, as the beans become frosted. The southern parts of Missouri, Kansas, and Illinois produce them. In 1879 the area rose to 68,179 acres, from which it became reduced to 9,306 acres in 1884. What the area is now I do not have the statistics for. The primary cause of this decline was the cost of labor in handling the crop at harvesting time. The beans begin to ripen at the lower part of the spike, and require frequent successive pickings as maturing progresses. This demands an amount of labor which cannot be afforded at the high prices prevalent in the West.

The crop, as grown in our horticultural ground of the State agricultural college, is rank and tropical in its growth of large, broad leaves, lanceolate-lobed, and some twenty inches to two feet in diameter from tip to tip. The crop attains a height of nine to forty feet, and, of course, requires much space.

The price depends somewhat upon the quality of the seeds. Frosted seeds are reduced in value and unprofitable to handle. The present price for good seed is $1.40 per bushel in St. Louis, and at twenty bushels per acre make a fairly profitable crop. Good crops of fifteen to twenty bushels per acre may be readily grown, but our broad, slashing style of farming gives a low average yield of not over ten bushels per acre, though such a yield is unprofitable. But with good culture on soil made rich enough, the yield is ample. The oil consists of carbon, hydrogen and oxygen elements of plant-food, which make no drain upon the soil when the residue is returned to the soil. This fact and its broad leaves and summer growth—the latter being a factor in the case—so far as this crop is concerned, make the nitrogen question of easy solution.

The soil for it may be any good wheat or corn soil, but a sandy loam well drained makes the best type of soil. The ground is prepared as for other crops and responds to good tillage, as more delicate crops will. While its vigorous growing habits give it a capacity to help itself, yet, the more the opportunity, the better the growth. They are planted here in rows about six feet square, and every forty to fifty feet an eight-foot row is put in for a wagon-road through to take out the beans as they ripen. They suffer from late spring frosts as do our common beans, and so planting is withheld until danger from that source is over. Many pour warm water over the seeds, or soak them before planting, as they are slow to germinate—planting rather more to the hill than of the field bean—although but one or two plants are left to the hill. One plant to the hill is best. The cultivation is in all essentials that of corn—keeping the ground clean up the hill and mellow. The beans are gathered as they ripen, otherwise they scatter out. The drying is done on a floor made in the sun, or on a canvas when the amount is small; but the usual way is to prepare a spot, free the soil from grass, and beat it hard or smooth, leaving several feet of space between the beans and the grass ground, as they will pop off at a large distance when breaking the pod. The wooden floor is the better practice. They require some attention when a rain is expected, raking together and covering by straw, canvas, etc. The wheat crop of Missouri averages only 11.4 bushels per acre, yet good farmers raise twenty bushels right along. The best farmers produce fifteen bushels and upward of castor beans, instead of the usual average of ten bushels, while it is claimed that twenty-one bushels may be raised. It is only as the crop becomes good that the labor of going through it every four to seven days will warrant. When a good crop is raised a bushel of beans is soon picked.



THE MANETTIA.

MANETTIA CORDIFOLIA.

This beautiful climber, from Brazil, has had to struggle for an acquaintance with plant-growers, notwithstanding the fact of its being one of the most desirable climbing plants under cultivation, as it will adapt itself to nearly any situation in which it may be placed. Its mission seems to be to please. It flowers freely and constantly, winter and summer. It is admirably adapted for a trellis in summer, growing with the persistency of a weed, and flowering profusely all the season. As a pot-plant for the window garden it is a perfect success. Always in flower—always beautiful. It is propagated by root, or green wood cuttings. Our illustration represents a plant growing in our office window.

MANURE AND MARSH MUCK FOR ASPARAGUS.

A subscriber to the AMERICAN AGRICULTURIST has an island in South Carolina where he keeps one hundred head of cattle. He pens the cattle every night and beds them with alternate layers of dry marsh muck and salt-marsh hay. These substances absorb all the liquid and dung from the cattle. Last year he had 5,000 loads of this manure. He uses it for growing truck, principally asparagus, at the rate of one hundred loads per acre. The land consists of old, worn-out cotton-fields, that have probably not seen any fertilizer since the war. The manure costs, all told, when applied to the land, about $1,000 for 5,000 loads, or twenty cents a load. He asks if we think "such muck and grass and manure are only valuable for their mechanical action on the soil, such as making it porous, holding moisture, heat, etc.?"

They are unquestionably valuable, not only for their mechanical action, but also for the plant-food they contain; and if our correspondent can make the cattle pay for their keep, and especially if he gives them a liberal allowance of cotton-seed meal, and he can get the muck, salt-marsh hay, and handle the manure, all told, for twenty cents per load, he can undoubtedly convert his land into a first-class truck-farm at a cheap rate, and with great profit.

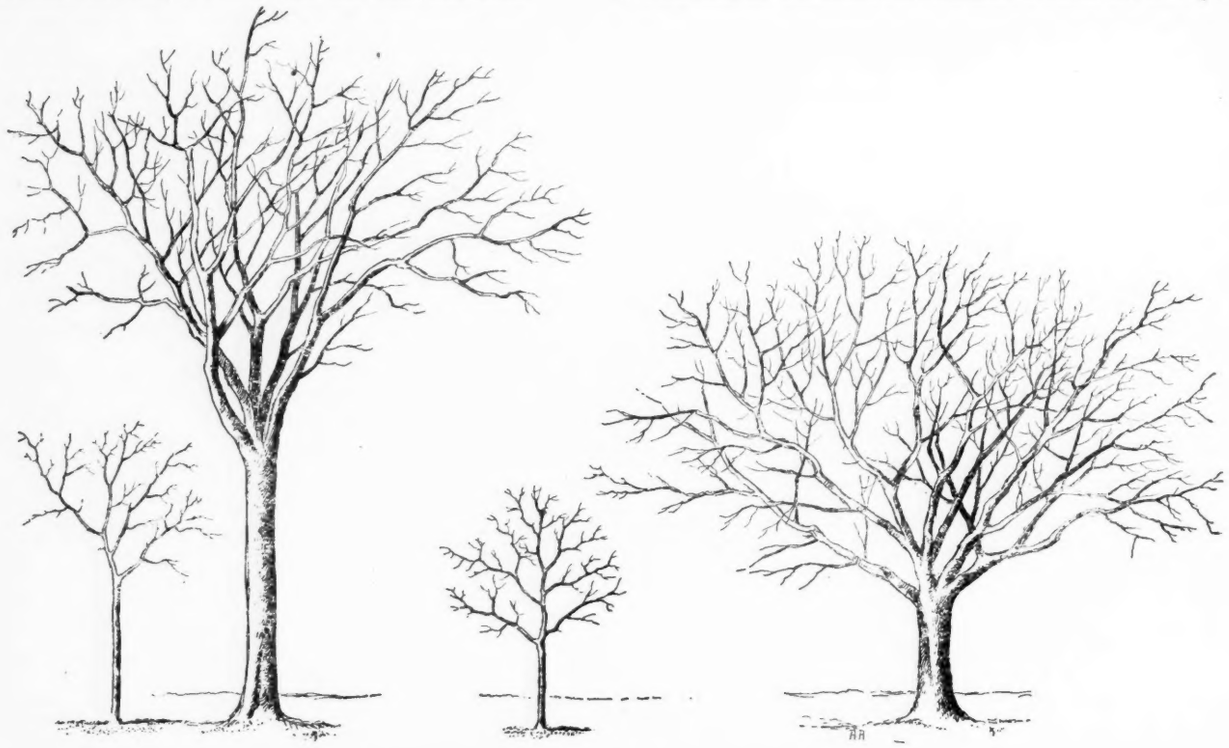
He also says: "For the Southern truck-farmers it is of the utmost importance to get their produce to market as early as possible, and the difference in that respect, between crops produced by bulky barn-yard manure and artificial fertilizers only, is simply astonishing, the crops from the latter being two or three weeks later than from the former." Possibly this is because the right kinds of commercial fertilizers are not used. So far as truck-farming is concerned, nine-tenths of all our commercial fertilizers contain so little nitrogen, that a ton of them to the acre will not furnish as much nitrogen as five tons of barn-yard manure. A ton of commercial fertilizer would be liberal dressing, and yet, on this farm, one hundred tons of barn-yard manure are used every year. We think, if our correspondent would sow one thousand pounds of nitrate of soda per acre on his asparagus in two dressings, say five hundred pounds early in the spring, and five hundred pounds just as the asparagus is starting, he will find, especially on this land which has been heavily manured for some years, that he will get not only larger and stronger shoots, but earlier also. That, at least, is our experience.

We have used nitrate of soda for several years on our asparagus-bed, without any other fertilizer, and it gets better every year. Many experienced asparagus-growers have used sulphate of ammonia as a top-dressing, and find it very efficacious. The sulphate of ammonia is converted into nitrate in the ground, and we prefer nitrate of soda because it is not only cheaper, but the nitrate is already formed and ready for immediate effect on the plants.

GOOD AND BAD PRUNING.

The accompanying engravings, outline sketches of which were sent us by S. Friedline, Montgomery Co., O., illustrate proper and improper methods of pruning young apple-trees, with a view to forming the head. On the left is a young tree, which has been trimmed up at the sides, leaving the top to run up to such a head as is seen on the mature tree by its side. In the middle is a young tree headed in to form a low, spreading top.

A tree like the first grows up with long, naked branches, fruiting only at the top. The fruit is far out of reach, and is gathered only with difficulty and extra cost. The advantages of a round, spreading head are many and manifest. There is a much greater amount of fruit-bearing branches, and the fruit is far more easily gathered. Another benefit arising from a low head is the protection it affords the trunk from sun-scald. The work of shaping an apple-tree begins when it is first set out, and continues during the life of the tree. One mistake in pruning is to leave this work until large branches are interlaced, whereas the better plan is to rub off the "suckers" or tender branches with the hand the first season of their growth. This work can be done very quickly.



THE WRONG AND THE RIGHT WAY OF PRUNING.

Sugar-Maples for Profit. — This county produces over two pounds of sugar and a gallon of syrup for each sugar-maple tree. It will pay to set sugar-maples on portions of the farm difficult of cultivation. In twenty or twenty-five years, these young trees will be ready to tap. Trees for transplanting can be obtained from nurserymen, or from the woods. I believe that the sugar-producing quality of the maple can be improved by careful selection of stock. Maples whose bark is quite dark are, as a rule, the very best sap-producers. The seed of such maples as are found to be superior sugar-producers should be planted. I believe that trees also vary in the quality of their sap, the soil and their location having much to do with this. Trees growing on stony or gravelly land give a sap richer in sugar than trees on heavy clay or swampy land. Trees fairly exposed to the sun have sweeter sap than those in the shade. This explains why trees standing in the southern or eastern edge of a sugar-bush are better than those on the north, both in quantity and quality. But this is no excuse for thinning out maple groves too much, as, if the sun is let in too freely, the trees soon begin to die. E. S. WOODWORTH, Mercer Co., Ohio.

MUNSON'S ALTERNATE RENEWAL SYSTEM.

PROF. T. V. MUNSON, TEXAS.

To obtain best results, American vines generally require alternate renewal of bearing wood, and few long bearing arms. Figs. 1 and 2 illustrate the system in perspective, and Fig. 3 represents a trellis as seen from above.

It is found that two No. 11 galvanized wires, tightly stretched, both at same height (four feet) from ground, parallel, and about two feet apart, supported by a pair of red-cedar or Osage-orange posts, set in the same hole, flaring at top, thirty-two feet from the next pairs of posts, the wires stapled on the top of the posts, give the best support. A pair of posts is better than a single post with a cross-piece nailed near the top, little more expensive, and will last as long as the vineyard, when made of cedar, Osage orange, locust, mesquite, or even good white oak. Cross-pieces would be frequently knocked off in cultivation. Practical test shows that posts between each two vines, as seen in Fig. 2, are not necessary, but that a pair for every four vines, eight feet apart, is sufficient, as the older the vine grows the stronger does its stem become, thus making a partial support, and sufficient, in connection with the posts, as in Fig. 1. The trellis should be set soon after the vineyard is planted, so that the training may begin the first year, as at V. 1, Fig. 1.

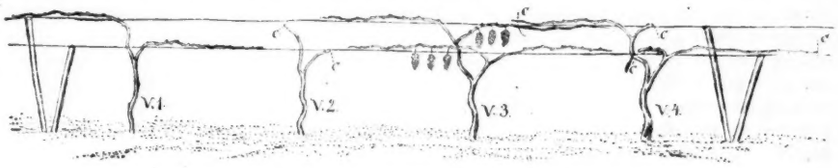


FIG. 1. ONE- AND TWO-YEAR-OLD VINES.

TRAINING.—The first year tie a string to each plant and to the wires above. Allow at first one good cane to grow and be carried up the string. When near the level of the wires, pinch out the tip and start the two upper buds, training one along one wire in one direction, and the other along the other wire in the other direction, as seen at V. 1, Fig. 1.

At the end of the first year, when the vine is fully at rest and its leaves shed, prune as shown at *c c*, Fig. 1, V. 2.

The following spring allow each branch of the fork to push two

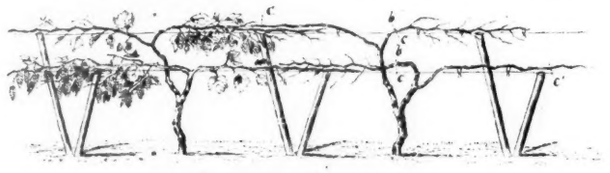


FIG. 2. THREE-YEARS-OLD VINE.

arms only, occupying both wires in both directions, as seen at V. 3, Fig. 1. A few clusters may be allowed to remain, as the first partial crop, providing the vine is strong, otherwise not.

This two-year-old vine should be pruned in the second fall, as shown at V. 4, Fig. 1, *c c*. Arms that bore a little are to be cut back to two eyes each, one of which is to make new wood for bearing the third year; while at *c c*, in V. 4, the non-bearing arms of V. 3 are shown cut back partially according to strength of vine. This will probably be the first profitable crop, being the second bearing year.

Fig. 2 represents a vine at three, four, or more years, in full bearing, and how it should be pruned for the next season, by cutting the bearing arms back to *b c*, *b c*, and the wood for bearing the next year at *c c*. Fig 3 is a top-view of the trellis as seen from above.

SUPERIORITY OVER OTHER METHODS.—The author, having carefully tried and observed the results of other methods, namely, the Fuller system, the Guiot system, with two and three wires, one above another, the single wire, the single post, and the stool system,

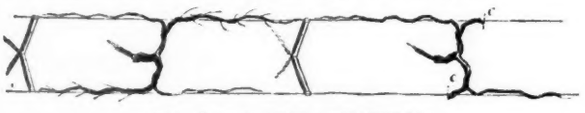


FIG. 3. TOP VIEW OF TRELLIS.

found defects in all, and has become convinced that this method gives best results with least labor, and preserves the vigor of vines to the greatest degree. Its advantages are:

1. Simplicity. Even a novice can soon learn to prune and train effectively.

2. The fewest cuts possible to prune are required.

3. The sap required to make new wood for bearing is not carried through wood bearing a crop, as in the spur systems, but a complete alternate renewal is effected, thus keeping the plant in perfect balance and meeting the natural requirements of the vine.

4. Long arms as the plants have strength to fill, are secured, and thus the true habits of our vines are maintained.

5. It presents less resistance to storms than vines trained on wires, one above another, and is much less subject to being blown out of place. As soon as the laterals push out, their tendrils attach themselves to the other wire. This prevents the twisting and inversion which often occur on a single post or wire, or on wires one above another.

6. A perfect canopy of foliage is formed above the fruit and the bodies and roots, thus preventing sun-scald, which is so serious often in the West and South.

7. It permits the fruit to hang entirely suspended, free from all chafing, all at about the same height, with best and equal exposure to light and air, and out of the reach of domestic fowls, pigs, etc.

8. It allows free passage of the air beneath the vines and of persons in cultivating, pruning, and harvesting, by stooping a little.

9. It places the work of pruning, tying, spraying for mildew, rot, etc., and harvesting, at the most convenient elevation; and also permits an unobstructed view over the vineyard.

10. By having the posts taller, say seven feet, a mule or horse could pass both ways, and such a trellis would be admirable for training upon it the Muscadine varieties of the South, such as Scuppernong, Thomas, etc.

11. It gives a regular and beautiful aspect to the vineyard.

12. It is quickly constructed and easily removed; and the material may readily be used again.

13. ("Baker's dozen.") It is not patented, but freely given to the world by its inventor.

A NEW WAY TO BUD ROSES.

A careful Californian florist, Mr. Pratt, of Fruitvale, communicates to us an interesting and successful way of budding, which, although it may not be really new, is but little known. His experience is that a much larger percentage of the buds "take" by this method. Instead of making a transverse cut in the usual way, and a perpendicular cut, as seen in Fig. 1, he makes two transverse cuts and a cut connecting them, Fig. 2. He shaves off his bud in the form of a partial oval with a square cut at the base, Fig. 3, and slips it under the bark until it touches the lower transverse cut. Then,

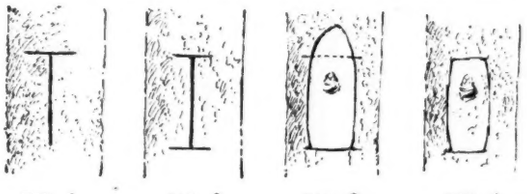


FIG. 1. FIG. 2. FIG. 3. FIG. 4.

placing his knife across on the upper cut, he squares the end of the bud also, and slips it down on the sap, as shown in Fig. 4. Thus he has a complete connection with the bark of the stock, both above and below. It is a very simple method, and nearly as rapid as the usual way. The tying is in the usual manner.

WEALTH FROM TEN ACRES.

DAVID H. SHERWOOD, CONNECTICUT.

I have found farming a profitable business. A single instance of it is a ten-acre field which I bought in the spring of 1881, near Long Island Sound, between New Haven and New York. It had not been plowed in thirty years, and was badly grown up to brush and timber. It cost me $1,000, and I spent $279 on it the first year in improvements. This, added to the first cost and interest on $1,000 at six per cent, amounted to $1,339. Wood was sold to the extent of $9, reducing the total cost to $1,330. In 1882, I planted four acres to corn, and the same area to potatoes. The phosphate for corn in the hill cost $15, and a vessel-load of New York manure for the potatoes cost $178. The labor expended on the lot and

crops for the year amounted to $360, which, with the interest, $79 more, made a total outlay of $633. The receipts for the same year were $588. They came from 700 bushels of potatoes at seventy-five cents: twenty-one bushels at thirty cents; ninety-five bushels of corn at thirty-five cents, and $24 worth of stalks. This ran me in debt $45, which had to be added to the debt of the previous year, making $1,375 as the cost of the field on April 1, 1883.

That year I raised four acres of carrots and four of potatoes. For the carrots, seventy-one tons, I received $11 per ton, or $781; for 1,057 bushels of potatoes, at fifty-four cents, $570; total, $1,351. The expense of manure was $979, interest on $1,375 was $82; total, $1,061, or net earnings for the year were $290; so that in the spring of 1884 I was out but $1,084. That year I had four acres in onions, four in carrots, and two in potatoes. For 690 barrels of onions I got $1,982; for forty-two tons of carrots, $407; for 140 bushels of potatoes, $56; total, $2,445. The expenses (including interest on $1,084) being $1,171, the net income for the year was $1,274. This was enough to pay the $1,084 the land stood me at the beginning of the season, and left me $190 in cash besides.

The next year (1885) I raised eight acres of onions and two of oats. The onions brought $2.69 per barrel, or $2,729; ninety bushels of oats, $40; two and one-half tons of straw, $20. With interest on the previous year's profit of $189, the total receipts for the year were $2,801. The expenses were $360 for manure; $10 for the use of a dock; $48 for carting manure; $10 for spreading it; $40 for plowing; $40 for harrowing; and $32 for thirty-two pounds of onion seed. The sowing and cultivation, at $31 per acre, came to $248; pulling and care, at $5 per acre, $40; carting in and to market, at sixteen cents per barrel, and store-room, $202; five bushels of seed oats, $2; harvesting and threshing oats, $16. The total expenses were, therefore, $1,179, showing a net profit of $1,622 for the season. Add the previous year's profits, and the net earnings of the lot above its first cost were $1,811, in the spring of 1886. Then I put eight acres to onions and two to rye. For 1,344 barrels of onions I received $2,782; seventy bushels of rye, $42; straw, $49; clover, $20; total receipts, $2,893. The expenses were $1,059, which made the net income for the year $1,833. Add interest on the $1,811 on hand at the beginning of the season, together with that principal, making $3,754 capital on April 1, 1887.

This year the ten-acre field was used for onions and hay, two acres being mowed. The onions, 789 barrels, brought $2,365; two cuttings of hay, at $12 per ton, $60; interest on the net capital previously earned, $225. The total receipts this season were, therefore, $2,630. This year I used six tons of bone-dust instead of stable-manure, which reduced the expenses $220, and left the total year's expense $839. Thus, the net income for the year was $1,791. In 1888 I again raised eight acres of onions and two of grass. The receipts for 1,477 barrels of onions, at eighty-five cents, were $1,255; three tons of hay, $36; interest on previous profits, $332; total receipts, $1,623. The expenses were $1,059, making the net income $564. Thus, the amount of money earned and on hand on April 1, 1888, was $6,109. This represents the net income from the field for seven years, besides paying for the land. Add to this the first cost of the field, $1,000, and the total net income is $7,109. I have since sold the ten acres for $3,500.

FLOWERS FOR THE FARM GARDEN.

MRS. P. M. A. CROZIER, MICHIGAN.

For most farmers' wives it is best to depend largely on hardy plants for the ornamentation of the home. Fortunately, there are many that are very beautiful. With a liberal and well-selected assortment of shrubs, herbaceous perennials, and bulbs, at flowering ages, the annuals may almost be considered luxuries, instead of necessities. Yet we should hardly be willing to do without some of them, and if one can command a well-fertilized strip of ground of proper quality, a few feet wide, at the side of the vegetable garden—a strip which has been well plowed with the rest—a dozen or so kinds of flowers may, with no great amount of labor, be raised from seed, and furnish a wonderful wealth of blossom for vase and corsage, from June or July till frost.

For these purposes the following will be sure to give satisfaction: sweet peas, sweet alyssum (Little Gem), candytuft, phlox Drummondi, pansy, dwarf nasturtium, aster, China and Japan pinks, verbena, salpiglossis, annual chrysanthemum, sweet mignonette, scabiosas, and petunias in variety. If any tender climbers are wanted, sow morning-glory, cypress vine, tall nasturtium, and thunbergia. Of course there are other good things, but one can not have everything, and a busy housewife would better have a short list of good flowers, easy to raise and take care of, than a long list, whose needs she may not know, to be sown and neglected. Most of the above may be sown in the open ground, and, under favorable circumstances, will do well.

I have found the method of starting plants like tomatoes or cabbages, and then transplanting them, excellent for some varieties. A cigar-box in the window serves nicely for starting seeds, and so does an oyster-can with one side out and perforated in the bottom. Set the plants out just before a rain, if practicable, in well-prepared ground, a foot or more apart, so they may be hoed like cabbages. The sweet peas, alyssum, candytuft, mignonette, and phlox Drummondi are best sown where they are to grow. If sweet peas are wanted in abundance and great variety, buy a fourth or half pound of mixed seed of a reliable seedsman, sow them about April first, if the season is favorable, as garden peas are sown, rather deeply, in drills at the edge of a border next the vegetables (the seed having previously been nicely sprouted in warm, damp sand), and let the cultivator pay its respects to the row. Furnish them with a trellis or brush to climb on. The salpiglossis—in mixed varieties—is beautiful enough to repay extra care if it need it, as is also the verbena. Do not leave these out of the list.

WOMEN AS FLORISTS.

There are many pathetic appeals from women whose health has given out at sewing, teaching, or some similar employment, and who would like to go into the business of flower-growing, as a means of making a living. Most of them are entirely ignorant of its requirements, but they seem to have the idea that it is a business which requires no special preparation. Many of them, too, have but little money to invest, and must begin in a small way. What shall they do? they ask. How begin? We sympathize with every woman who is in earnest about earning a living, and especially with those who have lost health in too close and long attention to the industries pursued by most city women who must pay their own way. We would like to tell them truthfully that they could easily carry out their wish of getting a living by raising flowers, but cannot. The fact is, as any florist can tell them, growing flowers for the market is as much of a business as making shoes. No thoughtful man would put all his capital into any enterprise without some knowledge of its requirements. In ninety-nine cases out of a hundred he would fail. There must be familiarity with the details of the business. Whoever would succeed as a florist must serve an apprenticeship with some one who understands the trade, or in some way acquire a thorough understanding of it. One who has not this knowledge cannot reasonably expect success in this industry any more than in any other. The first requisite is a love of flowers, for this will lead to an intelligent study of their wants and requirements. From studying their habits, one will soon arrive at a knowledge of how to care for them. In addition to this, the methods of the trade will have to be learned. This can only be done by working with some one who can teach it. Women who want to engage in this business, and have patience to learn its details, may start out with the intention of some day conducting it on their own account. But any person who has not this patience and willingness to master details, beginning at the bottom, will do better to let it alone.

SOME GOOD NATIVE SHRUBS.

E. E. REXFORD, WISCONSIN.

One of the most beautiful of all our native shrubs is the Wild Rose, with its rich, green, delicately-cut foliage, and pearly-pink flowers, whose fragrance is more delicious than that of any other plant I know of. It is beautiful all the year round. Its seed-vessels are good substitutes for flowers in winter. It is much preferable in every way to the old Cinnamon Rose, which soon makes a thicket of a garden, if not kept from suckering.

Another fine shrub is the Elder, with its great flat cymes of ivory-white flowers. A large bush, covered with blossoms, has the appearance of being draped with lace. Its wine-colored berries are very attractive during the autumn. For a corner where it can be given ample room to develop itself in we have few better shrubs.

The Dogwoods might perhaps be called small trees more appropriately than shrubs. But, call them what we will, they are well-deserving a place in any collection where there is room enough for them.

The Amelanchier, or Shadblow, is another good bush for gar-

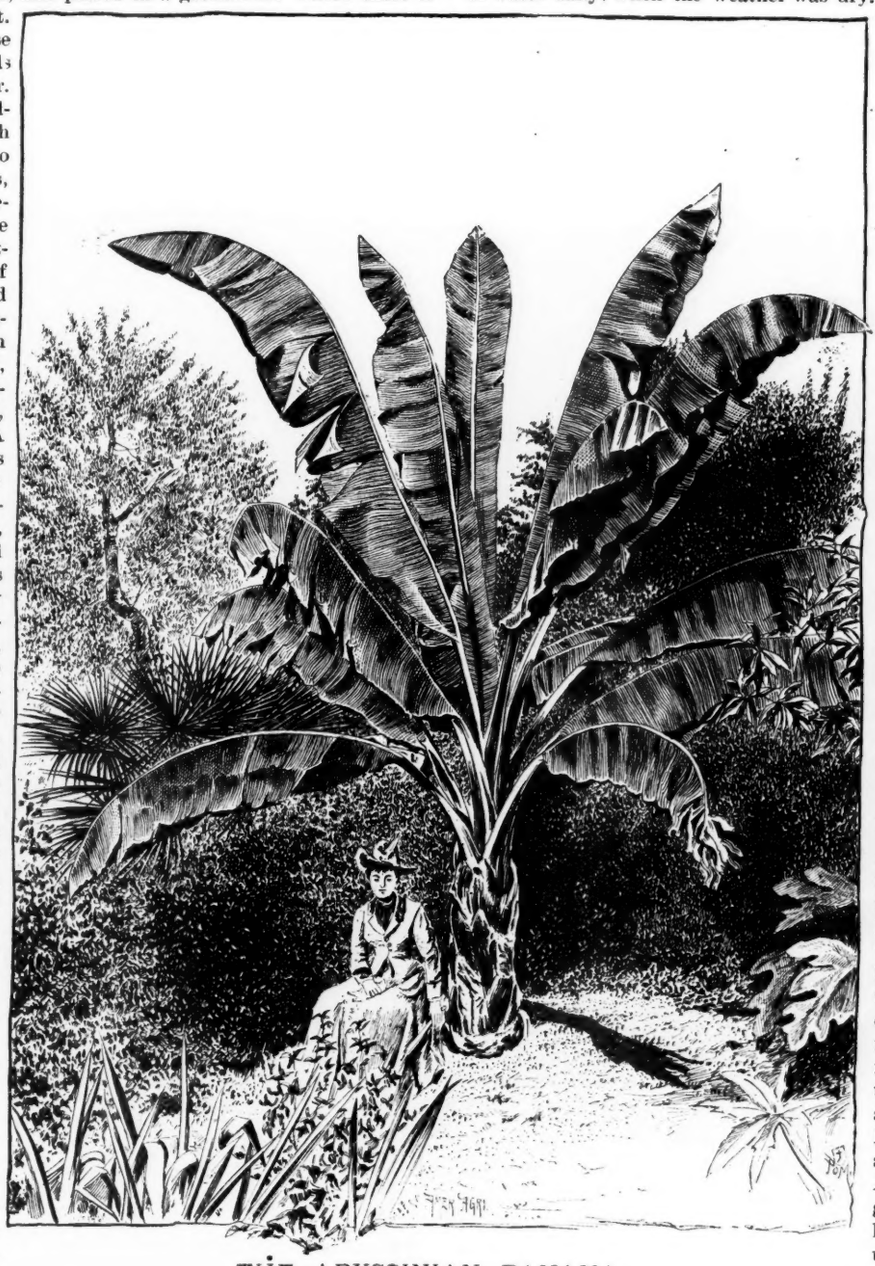
den use. Its white flowers are always hailed with delight, because they come so early in spring. In time it becomes quite a tree, but it can be kept as a shrub for years, by cutting it back well each season.

The Sumac is a most beautiful shrub at all seasons. Its foliage is quite fernlike in delicacy and palmlike in effect. In fall, it is simply gorgeous in its coloring. Its crimson clusters of fruit are very effective when seen against a background of snowy landscape.

Many other varieties might be named, which those who seek to avail themselves of native beauty will find by searching.

THE ABYSSINIAN BANANA (*Musa Ensete*).

This stately and graceful plant is easily raised from seeds sown in boxes of rich soil, and placed in a greenhouse where there is plenty of bottom-heat. If a covered glass case is to be had, the seeds will vegetate sooner. As fast as the seedlings appear, which they will begin to do in two to three weeks, they should be carefully lifted out of the seed-boxes and planted singly in pots of rich loamy soil, and set in a warm greenhouse. Repot as soon as the roots fill the pot, and as often as necessary to secure a rapid, healthy growth. A quantity of seeds sown last November commenced to germinate within a month, and have been shifted into larger pots as needed, until now (March 15th) they occupy eight-inch pots, and are two to three feet high. The commissioners of the New York city parks propose to use several hundred of these beautiful tropical plants in the different flower-beds under their charge in Union Square, Madison Square, Central Park, and elsewhere, during the coming summer, as well as in connection with the various lily ponds and along the borders of the lakes throughout Central Park. It will, of course, be necessary to plant in spots which are sheltered as much as possible from the prevailing winds, which are liable to damage the foliage, and to this end they may be properly employed in the vicinity of dwarf evergreens, or deciduous shrubs, as well as isolated plants upon grass.



THE ABYSSINIAN BANANA.

In the fall, the plants should be taken up and planted in boxes of soil, and either placed in a greenhouse or a cellar where there is no danger from frost. They grow larger and stronger every year. When lovers of tropical foliage effects realize that these plants are so easily raised and cared for, they will undoubtedly become very popular.

Treated as an annual, this Musa is equally desirable, provided its two great requisites—manure and water—are furnished unstintedly. A heaping wheelbarrowful of yard-manure is not too much for a single plant, and, when in good condition, it will absorb an unlimited amount of water. A beautiful specimen in our lawn, last summer, which had attained a height of six feet, and leaves four feet in length when cut down by frost, was only twelve inches high when planted the latter part of June. Its bed was prepared by digging a hole three feet in diameter and two feet deep; this was filled with fine, rich yard-manure within six inches of the surface, and well packed down. The plant was then placed in the center, its ball packed with four inches of soil, and the remainder filled with manure, and covered with a coat of soil. When the plant commenced to make a good start, it received from two to four pails of water daily, when the weather was dry. We do not recollect any single plant, the care of which has given us so much pleasure, and which has so bountifully repaid all the attention given it, as this one. Young plants raised in pots are now for sale by several seedsmen and florists. As a word of caution, we must add that, as the plant is of tropical origin, it should not be planted out-doors before all danger of frost is passed. The accompanying illustration is engraved after a photograph sent us by Mr. P. Britt, Jackson Co., Oregon, in whose garden the plant was growing last summer. It was then two years old, and nearly fifteen feet high. The first year it was growing in a large tub, and wintered in a greenhouse. The second summer it was planted out in the open ground in May, where it soon began to grow rapidly and to develop into magnificent dimensions. Early in November its leaves were slightly touched by frost, after which the larger leaves were cut off, the clump of roots dug out and removed to a dry cellar, to be planted out again in summer. Mr. Britt states that he has also a large plant of *Musa Cavendishii* growing in the greenhouse, but for outdoor use the *M. Ensete* surpasses all other species. While massive sub-tropical foliage effects are most appropriate for extensive grounds, well-grown single-specimen plants of considerable size may be employed in very small gardens even. The most pleasing arrangement of a small place consists in giving prominence to some leading feature rather than to crowd into it as many different effects as possible. A Musa, a clump of Cannas, or some other luxuriant foliage plant answers this purpose admirably, forming an agreeable contrast, as well as a pleasing relief from masses of glaring colors.

HOUSEHOLD

Embroidery of Table-Linen.

EVA M. NILES.

A great deal of the attractiveness of the table depends upon the linen, for the costliest silver or other ware will not please the eye on a table where the linen is rough or soiled. It is not necessary that the linen should be of the finest, for a medium quality, if cared for, will answer all purposes. The housewife will naturally have as nice a quality as she can afford, but even the finest, if neglected, will suffer in comparison with the poorest that has been well taken care of. It is the fashion to mark table-linen with the initial or monogram worked in white real Scotch linen thread. The lettering is always in script and very large, each letter being about three inches long, and is worked in one corner of table-cloths and napkins. The plain embroidery stitch, known as "over and over" is used, and the letters are first filled in with the thread worked lengthwise, so as to raise the work to a proper degree of fullness. When the embroidery is evenly done, it adds much to the effect of the linen and also washes nicely. To bring out the letters, they should be ironed on the wrong side, over several thicknesses of flannel.

Fine damask napkins which have become frayed at the hems, or otherwise worn, may be converted into very pretty tea and fruit doilies by removing the hems and fringing to the depth of one or two inches. If the center is worn, the threads one way may be drawn, and the doilies will have the effect of lace-work. Recent importations of French and Irish double damask show very rich patterns on the softest, satin-finished surface.

In luncheon sets, the patterns are in pale pinks, blues, and old gold, on a white ground. The napkins match the table-cloths and are heavily fringed. In figured damask cloths the pattern is sometimes outlined in red, blue, pink, or old gold real Scotch linen floss. When done in white it is also rich and effective. These cloths are, of course, for large dining-room tables.

Tea-cloths, as every one knows, are used at the five o'clock tea, so universal in English houses and now becoming so common in America. The daintiest of tea-services are used, and the beauty and elegance and picturesqueness of the table is much enhanced by the beautiful cloth, decorated either with embroidery or drawn-work. A good size is thirty-six to forty inches square, including hem or fringe. A hem-stitched hem, an inch or inch and a half wide, is the prevailing finish for the edge, although some ladies still prefer the knotted fringe, four or five inches deep, with one or two rows of knots. An entirely new finish is a hem-stitched hem, two inches wide, with white linen tassels knotted into its edge, either all the way around or set quite close together for four or five inches on each side of the corners, and the space between left without tassels. This last is quite an odd and pretty method of finishing.

Now, as to the material to be used. Nothing is more satisfactory than butcher's linen of a fine quality; not the kind that is bleached and pressed quite flat, but that which has a somewhat creamy tint and has apparently no dressing in it. It is soft to the touch and is beautiful to darn upon. Fine linen sheeting or pillow-slip linen also answers the purpose nicely, if one is careful in selecting to get a piece which is woven evenly, with all the threads the same thickness. There are also numerous linens made for embroidery, all of which are suitable.

Having selected the material, drawn the threads, and hem-stitched the edge, the next matter for consideration is the style of decoration and the coloring. If the linen selected is a very heavy piece, the style of decoration may be, of course, heavier than would be appropriate on a lighter quality of linen. All-white tea-cloths are very popular nowadays. Indeed, there seems to be a fancy for all-white in many things, such as bureau and wash-stand covers, sideboard covers, napkins, etc., but it is a sensible fancy. One pretty style for decoration is a geometrical border, made up of portions of circles and conventional flowers, outlined in two or three shades of the same color.

Monotony in American Life.

LILLIAN MAYNE.

The farmer works in the summer "from early dawn till set of sun," and is too tired at night to change his dress and make himself agreeable to his family. His wife, who works even more hours than her husband, is even more exhausted. In the winter, when the farm-work consists of a few "chores" night and morning, the farmer has too little to employ his time. He takes few papers or magazines to occupy his mind, and the monotony of rust proves just as wearing as the friction of overwork. One cannot ride for two blocks in a New York street-car without noticing the nervous, restless movements and anxious faces of overworked business men, who never take a vacation except when obliged to, on legal holidays. I believe that the loss of business on Saturday half-holidays, now becoming so popular in our cities and manufacturing towns, is more than made up to the employer by the freshness and vigor and good nature which the employee brings to his work on Monday. Many people sneer at the idea of a trip to Europe being given to a pastor by his people, but the members of his congregation understand that on his return he will more than repay their efforts by the interest and power of his sermons.

It is claimed that school-teachers have short hours, but in many of our city schools there is work enough to keep the teacher employed far into the night. I once taught a troublesome school, and corrected at home the written work of the pupils for hours when I should have been in the open air, with my thoughts far away from everything pertaining to the school. The result was sleeplessness. I found myself breaking down, and was saved from a complete wreck only by a firm resolution. I determined to consolidate classes in order to make time for the corrections, so that when I locked the school-room all my interests pertaining thereto should be locked in. The result was that I became physically strong, and the school prospered as never before.

The dress-maker sews all day, and should go out in the evening for fresh air and change; but, wishing to finish this dress or that, she gives herself no rest, and after a few months finds herself unable to work and in need of a physician. The physician, who understands, or ought to understand, the delicate mechanism of the human body, intent upon building up a practice, works night and day, giving himself no recreation, and finds himself prematurely a broken-down man.

The favored children of fortune—the belles and beaux of society—do not live more intelligently (why should they?) than our ministers, editors, physicians, and school-teachers. They devote their entire time to play, and the result is a monotony just as wearing as that of work.

It is true that there must be some routine, a system of work, if we would accomplish anything; but there is no reason for prolonging the dead level of monotony beyond working-hours. Why do we do it? I believe it is because we are too ambitious, or too grasping. Our wants increase so much more rapidly than our incomes, that, no matter how much money we earn, we are always greedy for more. A noted literary gentleman told me, not long ago, that his surplus funds are no greater at the end of the year now than when he earned only a tenth of his present income. He, too, is a victim of monotony. Not content with doing literary work all day, he works far into the night, and in consequence is physically infirm at an age when he should be robust.

There may be, in this fair land of ours, people who are living intelligently and happily, with variety enough to add spice to life, but few of them have ever crossed my path.

The Good Housekeeper.

MRS. M. HOWARD.

The housekeeper should never be in a hurry with her dinner. She should think beforehand what she is to get, and go about it in a practical manner, without becoming "nervous." If matters are prudently managed in the kitchen, she will have nothing to worry about. A wonderful simplifier of work is to have a place for everything, and, when it is used, to put everything back in its place. I sometimes wonder how many of the young ladies whom we meet with taper fingers and lily hands will make good, practical housewives. Many of them boast of their ignorance about household affairs, as if afraid it would lower them in the estimation of their friends to confess an ability to bake bread and do housework. A mother has no right to bring up a daughter without teaching her how to get a breakfast, dinner, and supper, and the different things which are requisite to keep a house tidy. She should be taught to give thought, care, and pains to housekeeping, so that her house shall be clean and healthful, and to be an intelligent, economical cook.

A woman should consider it an honor to be called a good housekeeper, and should keep mind and body in a condition to faithfully perform her allotted work.

What I Know About Lamps.

HARRIET P. RICHARDSON.

It happened that in going into the country every summer the care of the lamps fell to me; and, after several years' experience in giving light to the family, it struck me that a few hints upon the subject might be acceptable to others. If there is only one servant to assist as maid-of-all-work, the kerosene lamps will suffer for want of proper and intelligent care. New lamps do very well, and, if filled daily, the light will be satisfactory for some time. Unfortunately, lamps, like other household conveniences, feel the effects of time and constant use. The brass burners become encrusted with oil, which has burnt black; the little perforations, so important for just the right circulation of air, are filled with dust, and the lamps begin to give a dim light and to smell very unpleasantly. The first idea always is, that the oil is not so good as formerly; but a little observation will disclose where the trouble is, namely, in the burners alone. Now the best way to obviate this trouble is to take all the burners off your lamps, and, after removing the wicks, put the burners on the stove to boil. A little ammonia in the water will accelerate the process of cleansing. After the burners have been thoroughly boiled, a slight rubbing with a flannel cloth and sapolio will restore all their pristine brightness, and your lamps will no longer annoy you with a bad odor or dim light.

The care of lamps is quite an item in the daily routine, but if they are systematically attended to it takes much less time in the long run. Fill the lamps early in the morning and wipe them carefully, first with a damp cloth and then with a soft, dry one. The burnt portion of the wicks should be pinched off with a bit of cloth, and only occasionally should they be trimmed with scissors to keep them perfectly even. That most satisfactory of all lights, the Rochester reading-lamp, must have the burner boiled occasionally—once in six months is often enough. Many people use brushes or paper to clean lamp-chimneys, but nothing is so satisfactory to me as washing them in good hot soap-suds and wiping them, at once, with a linen cloth. A good light is an absolute necessity, and nothing gives a room a more uncomfortable, forlorn look than a sputtering, dim, ill-smelling kerosene lamp. Candles are pretty and fashionable, but are altogether too much trouble for ordinary use, for it takes longer to clean a candlestick than it does to put a kerosene lamp in order, and, if not perfectly clean, a candlestick is far from ornamental.

The Contented Laborer.

LAURA E. LYMAN.

A keen observer of human nature, and one who had himself tried various forms of life, said that he was satisfied, both from observation and experience, that day-laborers are the very happiest class of people. Why? Because they are not tormented by aspiration for things beyond their reach. Labor gives them a sharp appetite for their simple fare, and their sleep is sweet. Content reigns in their hearts, and restless ambitions do not disturb their peace. They accept without question the lot assigned them in the universal frame of things, and are happy in it.

Is aspiration, then, reprehensible? Ought one to settle calmly down and make no attempt to better his condition? Far otherwise. Those in whose hearts ambition burns with an inextin-

guishable flame cannot choose but try to rise; but when these flames of ambition begin to burn and consume the hearts that cherish them, they should be checked and kept under rigid control. Somebody must do the drudgery of the world. Somebody must dig and delve. Those who cannot get away from the treadmill must stay there, and best for them if they stay cheerfully. If they are "chained to the oar," they *must* pull when the command is given.

Most day-laborers work for their children, their households. What better can a man or woman, who has a family, do than work for it in the way in which Providence indicates? Meantime, they can enjoy the sun and the sky and the earth, and the unfolding minds of their children, and rejoice that with their own hands they can minister to the needs of their households in providing for them the food and raiment necessary for them, and in bringing them up in habits of industry. Life is work.

Baskets for the Housekeeper.

KATHERINE B. JOHNSON.

If one has an ill-arranged house, or is cramped for room, bags and baskets must, to a great extent, supply the deficiency of closets and cupboards. For many purposes baskets are the more convenient of the two, and they can now be bought so cheaply that almost any one can have a plentiful supply.

Clothes-baskets will last much longer if hung up when not in use; and only absolute necessity should induce one to use them for other than their legitimate purpose. The proper receptacle for soiled clothing is a hamper, and one large enough for an ordinary family can be had for seventy-five cents or a dollar. The baskets in ordinary kitchen use will wear much longer if given a coat of paint, both outside and inside. Prepared paint now comes in so many and such handsome shades, that it is fascinating work to paint the baskets, washtubs, pails, boxes, and other kitchen appendages. The cheap baskets in which grapes and other fruit are now sold make excellent receptacles for many things, and, if a few tacks are put in the edge, to fasten the bottom in, and they are then given two coats of paint, they will wear a long time. I use them to hold clothes-pins; to bring vegetables from the cellar; to hold the covers and rubbers of empty fruit-cans; to hold the family supply of tacks, nails, screws, and the tools which we are capable of using; to hold the bottles of staining liquid, varnish, turpentine, and the like, for renovating furniture; to hold empty bottles, and, if you have no more convenient place, the plainly-labelled bottles of medicine used in ordinary cases of sickness. Another contains old linen, cotton, and woolen rags, safety-pins, tapes, strings, adhesive- and court-plaster. The two last mentioned should always be kept either in your chamber or its adjoining closet.

These same cheap baskets may be ornamented and made really handsome. Sand-paper the handle until it is smooth and brown, or gild it with liquid paint. Take two pieces of French satine, one plain, the other figured, using the former as a lining. Cut two oblong pieces long enough to reach one and a half times around the basket, and wide enough to make a half-inch ruffle above the shirr at the top and to come well under at the bottom. Sew the two pieces together lengthwise, and fold so as to leave a ruffle half an inch wide above the shirr of the figured or outside material. Arrange it nicely on the basket, and plait the lower edge of the lining and tack it in position to the bottom of the inside of the basket. Gather the lower edge of the outside, and, leaving it a little loose or puffy, sew it criss-cross over the bottom with carpet thread. Cover the bottom with some strong material, hemmed to the puff near the outside edge. Cut a piece of pasteboard to fit the bottom inside; cover one side of this with material like the lining, and insert in place. Tie a bow of harmonizing ribbon to the center of the handle, and you have a handsome darning- or other work-basket. A frill of lace sewed to the top, to fall over on the outside, is a handsomer finish than the standing frill. Hand-knit or crochetted laces are suitable and handsome.

A roomy and convenient family sewing-basket can be made of the large-sized half-bushel peach-baskets. Nail the bottoms of two baskets directly together, or with a block of wood between. Cover with any material you choose, with scanty gathers at the top, and tie a wide ribbon around the center, in hour-glass fashion. A deep lace frill, to fall from the top, is handsome, and a pincushion fastened to the inside is essential. Pockets can also be attached to the inside if desired. A false bottom, made of a thin board covered with the lining material, and a loop of braid tacked to the center, in size to fit about three-fourths of the way to the bottom, leaves an excellent receptacle underneath it for things not required for daily use.

Oil Painting—II.

INA I. ALLEN.

It is an advantage for the student of art to work for a time at flat copies, before venturing on more ambitious work. Select simple subjects until you have become accustomed to mixing tints, and learned something about color, composition, light and shade, and harmony in painting, which knowledge will be a preparatory aid to working directly from nature. Not that you are excused from studying nature, for whatever subject you copy you will be better able to give it its true character, if at the same time you study it in connection with the natural object.

Floral subjects seem most pleasing as well as best adapted for the beginner, as a great opportunity for practice is afforded by their varied forms, tints, and textures, each flower having some special beauty of its own. Do not at first attempt double blossoms, as they are quite difficult to paint. Until you have acquired a free and effective method of handling your brush and colors, you will also do well to avoid fine flowers, such as arbutus or those made up of clusters, as the lilac or verbena; otherwise you will be liable to contract a cramped style. Brilliantly, or deeply-colored, or variegated flowers, like the pansy, are bad for early practice, as, the more color there is, the more difficulty in distinguishing the lights, shadows, and middle tints, the secret of which is the basis of success in painting as well as drawing. These different tones are much more distinct in white flowers, and for that reason we will try for your first lesson a study of Dogwood.

This shrub, with its creamy white involucre of four notched bracts, is too well known to need description. It is especially appropriate for decorative purposes, being effective on black and other dark shades of satin. It is also a favorite design for mirror frames, panels or plaques. The treatment is as follows: Lay in the general tone of the blossoms with a light warm gray, adding the high lights and dark touches of shadow afterward. For this gray use white and yellow ochre with a very little cobalt and madder lake, and the least touch of ivory black. The latter is very effective and enters into nearly all palettes, its purpose being to prevent crudity. In the shadows of the blossoms add burnt sienna and a little raw umber. The high lights should be laid on thickly, using white, yellow ochre and a little ivory black. The little reddish notches in the edges of the bracts are painted with raw umber, madder lake and white. These colors are also used for the center, adding a little ivory black and yellow ochre. In the greener parts use permanent blue, white cadmium, ivory black, burnt sienna, and raw umber. The green leaves, which are of a medium shade of rather warm green, are painted with Antwerp blue, silver white, cadmium, madder lake, and ivory black. In the shadows add raw umber and burnt sienna. In the twigs and branches, which are rather gray than brown, use raw umber, white, ivory black, madder lake, and a little cobalt. In the deeper touches add burnt sienna, and in the lighter parts a little yellow ochre. If a background is used, either one of pinkish gray or pale broken greens may be used.

Mrs. Hall's New House.

LAURA A. BEATTY.

A few days ago, I went over to see my neighbor, Mrs. Hall, who had just moved into a new house. They have been living in it only a few days, and part of the rooms are not furnished yet. Mr. and Mrs. Hall have been boarding for about six months, and, as this is their first housekeeping, they are enjoying it very much. With all their furniture to buy, and Mr. Hall just starting in business, they felt the need of economizing; so they have done all the painting and finishing of the wood-work themselves. Mrs. Hall said they found it very interesting work, and not at all difficult.

Mrs. Hall took me all over the house. Everything was in good taste, but nothing expensive. She said they wanted to have the wood-work grained, but finally they oiled and varnished it, as the graining was something they could not do themselves. Now they are entirely satisfied with the effect of their work. In the hall and parlor the wood-work—stairs, balusters, and all—is stained to imitate rosewood. One bedroom was finished in maple. In the dining-room the wood-work and floor were stained in imitation of walnut. In the remaining bedrooms, the kitchen, the closets, and the pantry, the wood-work was oiled and well done; also the kitchen floor. Mrs. Hall said an oiled floor was easier to keep clean and in good order than a painted one.

Her parlor, which she uses for a sitting-room, is furnished very simply. The carpet is a small-figured, bright-colored ingrain. The curtains are a dull yellow scrim, and the furniture consists of a low, comfortable couch, two or three easy chairs, and one or two home-made foot-stools. A large table, covered with a plain, dark felt cover, on which were papers and magazines, stood in the center of the floor. A set of hanging book-shelves, stained to correspond with the wood-work, filled with books, and a few good pictures, completed the furnishing of a cheerful, homelike room. The only carpet in the dining-room is a square of bright red ingrain, under the table, which contrasted charmingly with the dark floor. It was fastened down with brass-headed tacks.

She gave me the recipes for the stains, which are as follows:

Rosewood stain: Make a strong decoction of logwood and redwood; put it on the wood, boiling hot, with a brush. The lines and waves are made by giving two or three coats, and the light shades one.

Imitation maple: Dilute nitric acid and brush it over the wood; then expose to heat.

Imitation walnut: Wash the surface of the wood with weak alum water; then apply with a brush linseed oil colored with burnt umber and red lead. Be careful not to get it too dark. When it is dry, go over it with a strong sizing of transparent glue; then give it two coats of varnish.

To oil wood-work and floors: Apply boiled linseed oil, boiling hot, with a brush; then rub well with a woolen cloth.

When wood is oiled it is not varnished, but when stained it should have two coats of good varnish.

Other Things Besides Soap.

MARY W. EARLY.

While soap is the most widely-used of all cleansing applications, there are others more potent and more penetrating in their effects,—for instance, extract of lye, dissolved in hot water. This should be used with caution, however, as the hand would be much hurt, or perhaps even excoriated by coming in immediate contact with the lye. If you have a greasy kitchen-table, or a very greasy floor, nothing can so effectually cleanse them as a little concentrated lye, dissolved in hot water, and rubbed on with a mop, or floor-brush. Dissolved lye will also clean stained marble slabs in the nicest manner. I have seen it successfully applied to washstand, bureau, and sideboard slabs that had become badly discolored. When you are going to make a pot of soap, it is a good plan to take out a little of the dissolved lye before you add the grease for the soap, or it would be well to keep a box of lye, broken up into lumps, expressly for scouring purposes, and dissolve some of these lumps whenever you wish to scour something unusually dirty or greasy. Dripped lye would also answer a good purpose for scouring, and would not be so stinging to the hands as the concentrated. Any old-fashioned country housekeeper, or negro "mammy," knows how to prepare dripped lye.

Ammonia is one of the most powerful and valuable of all cleansing applications, and it is susceptible of an astonishing variety of uses. In the first place, it is a very valuable adjunct to the toilet. A spoonful or two poured into the bath renders it much more refreshing as well as more cleansing. It is especially nice for washing the hair, serving to cleanse the scalp thoroughly of dust and dandruff. Nothing cleans hair-brushes half so nicely as ammonia. Add a few drops to a basin of water, wash your brushes in this water, and they will come out as clean as when they first left the druggist's glass case. A teaspoonful of ammonia added to a quart of hot water and soap-

suds will have a very cleansing and brightening effect on your silver, and will also wash your mirrors and windows in the nicest manner. There is still another use, and a valuable one, for the ammoniated water after you have finished using it for bathing, or other cleansing purposes: after it has gotten cool, pour it over your roses or geraniums, and it will stimulate them into fresh beauty and vigor. Again, in cleaning woolen clothes, wiping over old black silk, or removing stains, I find ammonia of great value. Altogether, there are few things more serviceable to a housekeeper. Keep two bottles of it on hand, one of a refined grade to use in sickness,—as for nausea, faintness, headache, etc.,—and a bottle of a coarser kind for cleansing purposes.

Salt is cleansing for some purposes; for instance, it will remove the spots produced on silver spoons by eggs, and the gray streaks that come on white china from long or careless usage. Rotted wood-earth cleans knives nicely, especially if it be rubbed on with a piece of raw potato. A piece of coarse sand-paper is also excellent for cleaning knives.

Kerosene oil, among other valuable properties, possesses that of cleansing. If you have a smeary table, I know of nothing that will clean it so nicely as kerosene, and you may afterwards give it a gloss by an application of linseed oil and spirits of turpentine, mixed in equal proportions. Nothing cleans a sewing-machine as nicely as kerosene oil. Every now and then, a woman ought to take her machine to pieces,—or get her husband to do so for her,—clean it thoroughly with kerosene, and then give it a good lubricating with machine oil.

A Boy's Own Room.

One of the firmest and sweetest of home ties to a youth is his room. Make it pleasant and bright. Above all let him feel that it is his, and that you respect its privacy and sanctity. It is strange how early this feeling of pride in a room that he can call his own will develop with the least fostering. A little boy of seven recently had a tiny snuggery fitted up for him. His airs of ownership were something comical. An inexpensive but pretty set of china gives him more pleasure than any toy he has ever possessed. He never leaves his wash-bowl half full of dirty water, or his soap out of its dish, and is as neat and dainty about his toilet appointments as a girl. A description of this stand of home manufacture will show you how simple is this room, which nevertheless will always be a

A BOY'S TOILET STAND.

pleasant, cheerful spot in the boy's memory when he is no longer a boy.

A soap-box twenty-six inches high was placed on end and another one, thirty inches long and twelve inches wide, was turned upside down over it. It was a snug fit and did not require nailing. The top was surmounted by a pad covered with old muslin, and over this a pretty cover with embroidered ends was laid. The front and sides were draped with a rather full curtain of a pretty striped material called Bombay cloth. It cost eight cents a yard and has pink, blue, and ecru stripes on a cream ground. Fifty inches above the top of the stand, and directly in the middle, was a strip of wood twelve inches long, fastened firmly to the wall by means of a cleat; at the end a brass knob from a curtain pole was screwed in. Twenty-seven inches above the top of the stand, on either side and in a direct line with the ends of it, two similar

TASTEFUL APRON.

lengths of wood were fastened to the wall. These were ends sawn from a curtain pole too long for its window, and were also embellished with brass knobs. A single width of the goods was thrown over the strip of wood at the top, and fell like a tent several inches below the top of the stand on either side, as shown in the illustration. Above the stand, at the right distance for the height of the boy, was hung a small mirror, whose plain wooden frame was twisted with goods like the drapery, and ornamented with a pink bow at either end. Bracket shelves under the mirror contained his brush and comb. From two scraps of blue satin, joined with crazy stitches of yellow silk, was made a piece eight inches long and seven wide. This was edged with a bit of white lace two inches wide on the ends, closed in the form of a long roll, stuffed with batting thickly sprinkled with sachet powder, tied shut at the ends with narrow pink ribbon and suspended by the same from a nail at the side of his stand where it dispenses pins and sweet perfume at the same time.

There was no bureau in this tiny den, but a shelf at the right distance from the floor was bracketed to the wall, and on this stood a handkerchief box of a simple style of workmanship but useful and commodious withal. Take an ordinary box, such as letter-paper comes in, eight inches long, five wide and three deep, or, indeed, a box of any dimensions that you may happen to have. Line the bottom with a thin layer of wadding, sprinkle with sachet powder, and cover with thin silk, which can be fastened to the box with very small stitches, and the edges turned over the outside of the box; line the cover in the same way. Raise the cover on the outside by wadding it to resemble the top of a pincushion; cover with plush and conceal the stitches around the edge with a silk cord or a row of tinsel braid. The body of the box outside is to be covered with plush sewn on plain without wadding. The cover will remain shut by its own weight. It can be ornamented with a bow of ribbon on the top. Any scraps of silk, velvet, plush, and lace can be combined to make this pretty and useful article.

As a boy grows older, give him a larger room, if possible, one in which he can have a fire. A boy who is studiously inclined can make much better progress if allowed to study in privacy than he can with the family about him. Emerson says the best part of a college education to a young man is his room with fire. Don't keep any room shut up as a "spare room" while your boy sleeps with his younger brother.

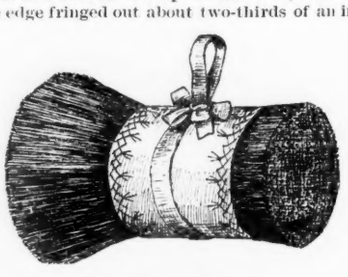
A Dressy Apron.

The quaint simplicity and neatness of the pretty apron herewith shown render it a charming addition to the house toilet of either maids or matrons. It is made of sheer linen lawn, but muslin, or any material thin enough to be semi-transparent, may be employed with equally good effect. The fabric selected should be neatly hemmed, tucked, and trimmed with lace across the bottom; then, before the waist-hem is made, four clusters of lengthwise tucks, three in each cluster, should be made to extend from the top downward. These should be arranged so that the three plain spaces between the clusters and the two outside spaces will all be of the same width. The two front clusters are each twelve inches deep, and the other two nine inches; each tuck takes three-quarters of an inch of the material; that is, is three-eighths of an inch wide when completed; and the middle tuck in each cluster is carried nearly an inch below those on either side of it. These tucks are very decorative, showing so plainly in the thin fabric, and serve to fit the upper portion of the apron with easy smoothness; below them the fullness falls freely like a Spanish flounce. The hem at the top may be just wide enough to admit of running the ties through, as in the model, or it may be deep enough to form a shirr with a narrow standing ruffle for a heading, if preferred. The ties are in the form of a long, narrow sash of the same material, tucked and lace-trimmed across the ends; they are tied in a full, soft bow on one side, or at the back, according to taste. Those to whom the absence of the discarded bustle is a grievance will find the latter arrangement becoming, especially with princess or one-piece home dresses.

Hair-Cloth Brushes.

Among the neatest, prettiest, and most useful little articles that young people can easily and quickly learn to manufacture are the hair-cloth brushes so highly prized by those who have used them; they cost but a trifle, in time or money, and are always acceptable to young or old. They are shaped and decorated in many different ways, but the "double-under" here shown is the prettiest and most convenient form of all. At one end the brush is short, thick, and compact, just the thing to use for cleaning dusty velvet; while the other end serves as a clothes-brush for general use. Hair-cloth remnants may be obtained for a trifle at any upholsterer's, if one has none on hand, but an old lounge or chair covering will do equally well if cleansed with a brush dipped in warm suds, rinsed, and pressed out smoothly. Take a long strip of the cloth (cut so that the hair goes crosswise) as wide as the whole length of the completed brush is to be—about seven inches will do—and draw or ravel out the lengthwise threads along the sides until an inch-wide fringe of the hair is formed on one side, and a three-inch fringe on the other. Begin at one end and roll the strip into a tight, close roll, the closer the better, until it is as large round as you wish the brush to be; turn in the end, and confine it by driving a few strong pins straight into the solid roll; then turn and drive in a few more on the opposite side. Cover the three-inch connecting roll with a band of plush or velvet decorated with fancy stitches, and around that pass a narrow satin ribbon and tie it in a bow, as represented, leaving one long loop by which to hang it up when not in use.

Dainty little single brushes, to be kept in the hat- or bonnet-box, with which to brush carefully the velvet without mussing other trimmings, are made of a four-inch strip of the cloth, with only one edge fringed out about two-thirds of an inch,



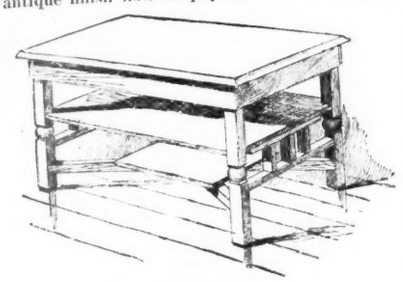
DOUBLE-END BRUSH.

and formed into a roll only an inch or an inch and a half in diameter; then all but the fringed portion serves as a handle, and is smoothly covered with any pretty fancy material.

A Library Table.

The illustration shows a handsome table, suitable for the library, that can be made by one who is handy in the use of tools. It should be made of well-seasoned oak, cherry, or other hard wood having a handsome grain or capable of receiving a good

polish. Cross-pieces are firmly attached to the tops of the legs. The top is then put on, and the cross-pieces firmly screwed to it, with screws short enough to prevent their passage entirely through the wood. The side-pieces beneath the top have holes bored through them diagonally. They can then be screwed to the top with screws of the proper length. If the table is made of oak, go over it, when well smoothed, with oil and lamp-black, rubbing the mixture into the grain, and removing all that does not thus enter the wood. When dry, the table can be varnished, and will have the dark antique finish now so popular. If the work be



SUBSTANTIAL TABLE.

done in cherry, the table can be finished in the natural wood, or stained the rich cherry color of Venetian red and oil, and then varnished or polished on the grain. The two shelves will be found very useful for papers and magazines, while the drawer is large enough for a variety of uses.

More Photograph Cases.

Photograph cases have quite superseded the old-fashioned album. A handsome case shown in our illustration (Fig. 1) is made from a piece of plush one yard long and eleven inches wide. Line it with a layer of wadding, scented, and then with satin of a contrasting color. Turn up either end

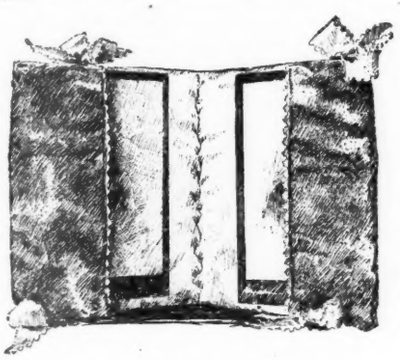


FIG. 1. CASE FOR PHOTOGRAPHS.

for a distance of seven inches and fasten by lacing a thin silk cord back and forth, crossing like shoe-laces, and tacking at opposite sides of the case. The open space should be half an inch wide. Put two bows on each side, and cross with a wide band of ribbon, on which paint "Photographs" in antique letters. Golden-brown plush, lined with yellow satin, the ribbons of the latter shade, makes a serviceable case. The one in our illustration is of cream plush lined with yellow satin, with ribbons of the same shade. Instead of crossing the ribbon as in the cut (Fig. 2) you may make a handsome bow of ribbon five inches wide, and place a little to one side on the upper part. Very nice plush for fancy work can be had for sixty-nine cents a yard, and as the satin or India silk for lining costs from twenty-nine to fifty cents a yard, this is not an expensive parlor ornament. The pieces left from the width will make a pretty sachet bag for

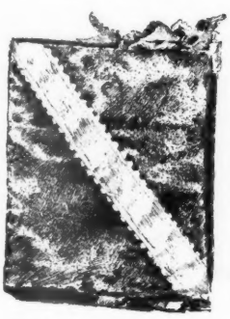


FIG. 2. CASE FOR PHOTOGRAPHS.

the back of a chair. Another style of case is made of ecru canvas painted with pansies. It is eight inches square. Still another is made to hang up. Take two pieces of pasteboard seven by nine inches, and cover the one for the face with kid, chamois, plush or satin, painted, embroidered, or plain. Cut a diamond-shaped aperture in the center large enough to show the face of a cabinet picture, and sew around a row of tinsel cord, to conceal the edges, or, if chamois or kid be used, paint a band of gilt around it. Join the two pieces with a full bias puff of silk of a contrasting color.

A Laundry-Bag Made of Towels.

Laundry-bags are so popular and useful that any recommendation of their good qualities would be thrown away if offered to the thrifty housekeepers of the AMERICAN AGRICULTURIST; but the bag here presented has two recommendations, which all have not. The first is, that the pair of handsome, fast-colored, bordered towels of which it is made may be washed without injury, which cannot be said of many of the embroidered and crocheted bags one sees; and such bags surely need cleansing occasionally, as much as their contents do. The second is that a *towel* laundry-bag may be quickly put together when one is in need of an extra one (as in the case of a boarder, or when preparing a guest-chamber for occupancy for a time only), and as quickly taken apart if no longer needed, when the towels, being uncut, are as good for other purposes as they ever were. To make one, take a pair of fringed towels, with colored borders —one for each side—

TOWEL LAUNDRY-BAG.

and lay them flatly together; stitch them together across one end, an inch or two above the fringe, and up each side about two-thirds of their length; then, for one side, take a strip of ribbon rather longer than the towel; sew the two ends of it together; take a piece of whalebone (or anything slender, strong, and flexible), about two-thirds as long as the towel is wide; double enough of the ribbon lengthwise over it to cover it, and baste it in securely. Draw the upper end of the towel over it in careless folds, and secure it in place by strong invisible stitches. The rest of the ribbon forms a loop by which to suspend it. Finish the other side in the same way, and it is ready to hang up. To open the bag, take one loop from the hook, as represented in the sketch; the sides being open two or three inches at the seams, an ample mouth is formed when the front loop is dropped off the hook, and the contents are neatly covered up when it is replaced. If intended to last, an embroidered spray or a monogram on the front side is very pretty.

The Rattan Climber.

Every one knows the pretty, light, and graceful chairs and other articles of furniture made from rattan; but every one does not know that the extremely tough and flexible wood called rattan is that of a climbing palm-tree. This curious climber (which is more of a vine than a tree) is one of the singular characteristics of forest growth in the Celebes and other Malayan countries. Starting with a trunk as thick as a man's leg, it winds through the forest, now wrapping a tall tree in its folds, like some gigantic snake, and then descending again to earth and trailing along in snake-like curves until it can find some other stately tree to fasten and climb upon in its pursuit of light and air. The forest is so thick and jungle-like that it seems impossible to follow the course of any one of these serpentine climbers; but there is little doubt that at the last the successful aspirant, which stooped and cringed so long below, will be found shooting up like a flag-staff a dozen feet or more above the tree which has helped its rise.

A use of the rattan, which is unknown to those who have not seen it in its native forest, is that of a water-carrier. The thirsty traveler has at all times a tumblerful of cool, refreshing water at his command by cutting off six or eight feet of the rattan and putting one of the severed ends to his mouth, or holding it over a dish to catch the water.

Fancy Bag.

The materials for the pretty bag shown in our illustration are a strip of gold-colored China silk, nine inches wide by seven-eighths of a yard long; a brass ring, an inch and a half in diameter, and three-quarters of a yard of gold satin ribbon. The ticking is the old-fashioned narrow blue-and-white striped variety. Up each blue stripe sew a row of tinsel cord, alternating the silver, gold, and bronze. Each white stripe is to be worked in either herring-bone or briar stitch, with colored silks—the more shades the better, so that they are assorted with an eye to harmony. Sew the two pieces together and turn so that the right side of each shall be out; turn in the edges of the open end, and blind-stitch. Turn one end up like a pocket, and button-hole-stitch the sides. The depth of the pocket is seven inches. Pass the other end through the ring for nine inches, and tack it so that it will stay in place; run the ribbon through the ring and tie a pretty bow. Take one corner of the end that hangs down, and plait and tack it up, as in the illustration. This bag is susceptible of a variety of uses. Made with dark silk, it is a beautiful shopping-bag. It is a nice work-bag for ladies who go out to spend the afternoon. It is a pretty ornament for a parlor, to conceal a piece of cheese-cloth, hemmed and embroidered, and called a duster—although, of course, you never dust anything but the choicest bits of bric-a-brac with it. Made a trifle shorter, it is a convenient ornament for the dressing-case, where it serves as a receptacle for a supply of gloves and handkerchiefs for constant use.

A PRETTY BAG.

Knee-Pads for the Boys.

The struggle to keep knees in the little hose may be lessened if mothers will use a small article of which we give diagrams, showing one-half, and the article completed. A pair of these knee-pads will make one pair of stockings wear as long as three on the little knees that are always on the floor. They can be made from a tiny piece of cloth in ten minutes, with a machine. The shortest side, marked A (Fig. 1), is two inches long; B is three inches, and C, which is slightly rounded, is four and a quarter inches straight across from point to point. Seam the two pieces at C, press the seam open, bind with dress-braid; sew two shoe-buttons, as

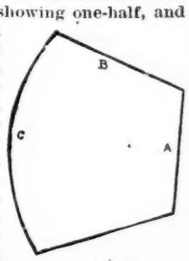


FIG. 1. PATTERN OF KNEE-PAD.

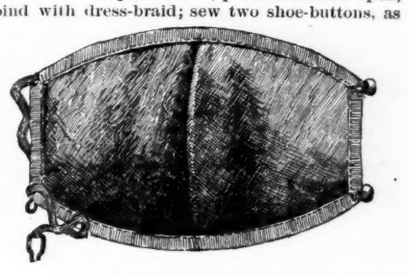


FIG. 2. KNEE-PAD COMPLETE.

shown in Fig. 2, with strips of elastic to fit the knee, terminating in garter-fastenings to slip over the

buttons. There are one or two stores in New York where these pads can be purchased for thirty cents a pair, but they cost literally nothing to make at home.

Household Recipes.

Buckwheat Muffins.—Dissolve one teaspoonful of soda (not heaping) in two cups or one pint of buttermilk; add a tablespoonful of molasses and a little salt, and stir in one cup of sifted flour and one and a half cups of buckwheat. Bake in gem pans or muffin rings.

Grandmother's Gingerbread.—This is the real old-fashioned gingerbread of our childhood's days. One cup of New Orleans molasses, three tablespoonfuls of melted butter, one teaspoonful of soda dissolved in five tablespoonfuls of hot water, ginger, salt, and half a teaspoonful of powdered alum. Two and a half cups of sifted flour. Pour into well-buttered iron pans about half an inch thick and bake in a quick oven.

Beef Kidney.—This is a very delicious way of serving beef kidney: Cut the kidney in thin slices not more than an eighth of an inch in thickness; cut out the center, which is tough and indigestible and gives it its rank taste. Soak in salt water for several hours, then parboil for five minutes. Put butter in a pan and when very hot lay in the kidney, with a teaspoonful of finely-minced onion, salt, pepper, two tablespoonfuls of tomatoes, stewed and thickened, a minced gherkin and some celery salt; add enough of any kind of stock or gravy to cover it, thicken with a tablespoonful of flour wet with cold water and simmer for ten minutes. Pour over toast.

Strawberry Cake.—This is something more than the old-fashioned strawberry shortcake. Make a simple sponge cake and bake in two layers; when done these should not be an inch thick. For the filling bring a pint of milk to the boiling point in a double boiler, add the yolks of three eggs well beaten with two tablespoonfuls of sugar and one of corn starch; stir until it thickens and turn out to cool. While the cakes are still warm, spread a layer of this over; cover thickly and regularly with large strawberries; lay on the second layer of cake, cover with a thinner layer of the cream, and place berries on top. Dust with powdered sugar and serve with a pitcher of milk or cream.

Leg of Mutton.—Mutton cooked in this way has a very superior flavor and a juiciness quite unknown to an ordinary roast. Have the butcher bone the leg; in place of the bone insert a stuffing made of four ounces of butter, minced parsley, and a very little finely-minced onion, salt, pepper, and flour enough to bind together. Tie the leg in place, and roll it in melted butter, covering it as thickly as possible with fine, dry bread-crumbs. Put it in the oven, and, as soon as fat begins to run from it, baste well. The next time you baste it sprinkle with flour. Do this several times in order that a crust may form which will keep in all juices. Fifteen minutes to the pound will be sufficient for a rare roast. Lay the meat in the baking-pan on a trivet to prevent any possibility of scorching.

Spanish Dumplings.—Sift one pound of wheat flour, make a hole in the center and pour in half of a two-cent cake of compressed yeast dissolved in half a cup of lukewarm water; let this stand until the bubbles on the top show that it is light. Add two tablespoonfuls of melted butter, a teaspoonful of fine sugar and half a teaspoonful of salt; stir in milk enough to make a dough that can be cut with a knife without sticking. Sprinkle the pastry-board with flour, turn out the dough, and cut into pieces the size of a small egg. Cover with a cloth and let rise again. Then put a cup of milk in a saucepan about ten inches in diameter, flavor the milk with vanilla, drop in six of the dumplings and cook for fifteen minutes without raising the cover. Lift out and serve with any sweet sauce.

Compote of Peaches and Bananas.—In farm households where cream abounds this is an inexpensive dish. Get the large evaporated peaches. Stew half a pound until tender by putting them over the fire with water enough to thoroughly cover; simmer slowly, and keep well covered with water. When tender drain carefully from the juice, or lift them out with a fork so as not to break them, laying them at once into a mold alternately with thin slices of bananas. Fill the mold two-thirds full. Return the juice to the fire with four heaping tablespoonfuls of sugar, the grated rind and juice of an orange, and half a box of Cooper's gelatine that has soaked for ten minutes in enough cold water to cover. There should be nearly a quart of the juice. Let it all come to a boil and pour into the mold (which must be large enough to contain it all) over the peaches and bananas. Let it stand over night, and serve with plain or whipped cream, sweetened and flavored. If bananas are not easy to procure the peaches are delightful alone, or peaches and dried apples may be cooked together. If you cannot get oranges or lemons for flavoring, use a spoonful of any sweet pickled fruit, or strawberry or raspberry jam. To whip the cream, put it in a deep bowl and beat rapidly with a Dover egg-beater, or an ordinary egg-whisk, or even a four-pronged fork. Five minutes will whip it as stiff as that used for charlotte russe. Half a pint of cream is enough for this quantity. You can use canned peaches, thickening the juice with gelatine in the same way.

Fashions for Girls and Boys.

The season has arrived when the children's wardrobes must be overhauled, altered, and replenished, and when a demand arises for wash-dresses, shade-hats, and the perennial cool shirt-waist. What a boon, then, to perplexed mothers are the delightful "outing flannels," which are so inexpensive, so daintily pretty, and launder so remarkably well. This cotton fabric, which looks and feels like wool, usually comes in stripes, as gray-and-white, tan-and-white, or perhaps pink-white-and-blue. It forms the most useful of every-day frocks, made up with a sailor-blouse and a gathered or plaited skirt. The deep, square collar which finishes the neck should be of plain-hued cashmere, matching the colored stripe, be braided with white, and tied very low on the chest with ribbons. The full skirt is sewed to a white cotton waist that buttons behind, and on the front of this is placed a shield of the cashmere, cross-barred with white braid, to show in the opening of the blouse like a sailor-shirt. This little costume will do nicely for wee boys as well as girls. Quaint enough are some of the white frocks prepared for small maidens, and for these nothing is nicer than fancy tucking and hem-stitched flouncing, which comes by the yard and is very wide. The full, round skirt that drops to the heels, in grandmotherly fashion, is formed of the flouncing, the upper edge being shirred and attached to a full waist, which is gathered once at the upper and twice at the lower edge, both front and back, and is sewed to a square yoke of the fine tucking, closing in the rear. The sleeves are full from the shoulder to the elbow, and below are deep cuffs of the tucking. A standing collar or narrow frill finishes the neck. Broad muslin sash-ends, neatly hem-stitched, are plaited high up in the under-arm seams, and tie behind in a huge bow. The same ideas here given may also be developed in any wash-fabric, or delicate shades of camel's-hair, challi, or nun's-veiling. A little bonnet of lawn, that is particularly pretty with this wee gown, is almost Quaker-like in shape and simplicity, having a close brim and plaited crown, with a narrow cape at the back; while the front is bordered with a strip of fine embroidery.

Girls of six and eight wear with their long-skirted white dresses a velvet girdle, sharply pointed on the upper edge, both in the back and front, and which adds to the charmingly quaint effect. If the sleeves have a short, high puff at the shoulder, the looser edge is encircled by a velvet ribbon, the same color as the girdle, which is tied in a bow on the outside of the arm.

Pretty wool frocks, to wear over white guimpes, are liked of striped or figured camel's-hair or challi. The bodices are half-low, round, and full, and display Vandyke points of velvet, extending upward from the waist-line, and on the short, puffed sleeves. These points are about five inches in depth, and are as fashionable for little women as for their elders.

Charming blossom-strewn India silks form cool, pleasant best dresses, and are made with a half-high waist, lapped in front in folds, ending beneath a large rosette placed on the left side, and edged with one single revers of velvet. It is rather curious to note, however, that bright colors do not seem to be considered so *chic* for children as more somber tints, and that the diminutive Fifth Avenue darlings appear in gray, white, wood-brown, or the dullest of dull plaids, rather than blue, red, or green, while shoes and stockings are invariably black, except on the tiniest toddlers. The aureole bonnet is another style affected by these well-born lassies or their mammas, and, as it is easy to make, will likely become popular. It is nothing but a round piece of silk, cashmere, or lawn, gathered into a band and stiffened with crinoline. A row of braiding or embroidery surrounds the crown, and a small bunch of flowers or cluster of tips is set at one side.

Straw hats are generally large, and many flare very much in front. Plaid ribbons are liked on school-hats, but more dressy ones are trimmed at the back with a spray of field-flowers or rosebuds, and have many ribbon loops pointing toward the front.

The Fauntleroy suit has had its day, and no longer are small boys made miserable by girlish sashes and lace ruffles. Instead, they study and play in short trousers of strong plaid or striped Scotch goods, and have jaunty short jackets, curving open to show a vest; while their older brothers discard the waistcoat entirely, and choose, instead, jackets with plain, straight fronts, buttoning closely. Shirt-waists of linen percale or gingham will, as ever, be worn during the warm weather by lads under thirteen, or until suspenders are used. For Sunday and dress suits, blue or black tricot, made with a short English jacket, slightly braided, is much favored. With this a white vest may be worn if liked, and for tiny chaps the same style is sometimes carried out in velvet or velveteen. Long black stockings meet the short knickerbockers, and the shoes are either laced or buttoned. Plaid overcoats with capes are worn by boys of all ages, and sailor-hats and polo-caps are popular with the wee gentry.

Baby laddies, just donning short clothes, like their sisters, have their white lawns and piqués, pretty pale-hued chamberys and plaid ginghams made with a high baby waist, coat sleeves, and gathered, hemmed skirt falling to the ankles. To give a boyish air, however, four box-pleats adorn the front of the waist, and one runs each side of the buttons in the back. If more trimming is desired, narrow white insertion is laid between the pleats, and a strip of embroidery edges the high collar, and is turned down outside. These tiny chaps wear short white hose, and either black or tan kid shoes. Their hats are of muslin or piqué, drawn on cords. Little fellows, from two to five, on the contrary, have quite short skirts that display their chubby bare knees above short white socks. Their one-piece dress buttons in front, the kilt being sewed to the pleated waist, while a belt of the material laps to the left side and fastens with a large pearl button.

Linen, cross-barred with colors, piqué, and twilled flannel, are serviceable fabrics for restless youngsters; but, for special occasions, a little man looks very picturesque in a sailor-suit, that has a blouse of yellow china silk and a jacket and kilt of white flannel or serge. The deep wool collar is lined with the golden-hued silk, and white anchors are worked on the yellow silk cuffs. A bulging sailor-cap to match should be made of the wool goods by cutting a circular crown, interlined with two thicknesses of crinoline. To it are sewed the sides, which are joined together at the center of the front and back, and form a sort of Tam-o'-Shanter shape. A band is then fastened to the loose edges of the sides and joined at the back, beneath a yellow ribbon bow. Lined with silk, and with anchors wrought on the band, this will prove an extremely jaunty and becoming little head-gear.

A Spring Calendar.

E. K. WINANS.

Have any of the AMERICAN AGRICULTURIST readers read Harrison Weir's "Every Day in the Country?" It is simply an English note-book of the growth of the seasons, carried on from the first of the year. A journal like it, but just telling of the advance of spring, adds pleasure to that delightful time. Try noting something every day. The wild geese flying, the frog's first "screeching," the earliest song-sparrows and Jacks-in-the-pulpit. It is not so easy, though; each year one resolves not to lose, this spring, a single step in the "awakening of the sleeping beauty;" one surely, by watching, can see just when the chestnut-leaves first make a shadow. From the time of periwinkles until the opening of the cherry-flowers all goes well, but then some mistakenly earnest bit of house-cleaning, or a long headache, loses two days' watchfulness, and next morning the little red oak-leaves are turning green, the apple-blossoms are unfolding, and the spring has surprised us once more.

Found at Last.

SYDNEY DAYRE.

"Three more ducks gone!" said Dick, with a very lugubrious face, as he joined the family of his uncle at the tea-table.

"Three more?" echoed his uncle. "When did you miss 'em?"

"I counted 'em last night, and I've kept a pretty sharp look-out of 'em all day. But to-night, when I counted again, three were gone."

"You're sure you counted straight?"

"Yes, sure."

"That's seven gone in the last week, isn't it?" asked his uncle.

"Yes, sir," said Dick.

"Well, at this rate it won't take many weeks to make an end of your flock of ducks," remarked his uncle.

"But I don't mean to let it go on at this rate," said Dick, resolutely. "Whatever it is takes 'em, I'm going to get the better of it pretty soon. I'll watch day and night until I find what it is."

"You'll get tired of that," said his younger cousin, Rob.

"You see if I do," said Dick. "Back where I came from boys stick to what they undertake."

"Boys that amount to anything," said his uncle, with a smile. "But, as far as that is concerned, boys vary as much in the East as in the West; on the Atlantic as well as on the Pacific slope."

"If I was at home in Connecticut," said Dick, "I'd soon find out what the trouble was. Nobody could run off my ducks or chickens or geese without my getting on their track pretty soon. But out here I'm not up to things yet."

"I think you'll find, though," said his uncle, "that the same things that helped you out in Connecticut will help you here. If there's a part of the world in which perseverance doesn't make its way, I have yet to hear of it."

"Perhaps it's tramps," suggested Dick's aunt.

"May be so," said Dick, "but I haven't seen any foot-prints around in the sand."

"Perhaps it's coyotes."

"I've never seen a coyote yet," said Dick, with interest. "How big are they?"

"Oh, about as big as a dog," said Rob.

"Now I know exactly how big they are," said Dick, laughing. "Never mind, I shall know all about them pretty soon if they come after my ducks, for I'm going to sit up all night and watch, and then, tramps or coyotes, they'll get the worst of it."

"There's only one other way I can think of for those ducks to get away," said his uncle, meditatively.

"What's that, Father?" asked Rob, while Dick eagerly listened for the reply.

"Most of the ducks 'round here have wild blood in 'em. Now, I've heard of such things as ducks that were thought to be entirely tamed being decoyed off by wild ducks. Tamed ducks can't fly like wild ones—they very soon get out of the way of flying; but a duck could swim anywhere, and these could easily get away by swimming."

"Another thing to be watching about," said Dick. "I guess I'll have my hands full, take it night and day; but unless those ducks melt away into thin air, I'm going to know how they go."

True to his promise, Dick made ready for a night of watching, hanging a hammock near the poultry-yard, knowing that he need not fear the night air of Southern California. For hours he lay awake without any reward for his vigilance. But nature was at length too much for the active boy, and he lost himself in a sound sleep, to spring up at broad daylight in dismay, fearing that the enemy might have taken advantage of his slumbers. But it was plain that nothing more than the night breezes and the beaming starlight had been near his feathered pets, for, as he counted them, they were exactly as he had left them the night before.

"So far, so good. Out with you now, you pretty things. Yes, you may go off towards the water. I'll be after you as soon as I get my breakfast, and then I won't leave you long enough for anybody to make away with you."

Dick brought his books out to the bank of the San Joachin river, which ran near his uncle's house, curving about in a way which formed little bays and inlets, offering very favorable conditions for the rearing of ducks.

All day he sat quietly beside the sluggish waters, sometimes watching the ducks as they dived and played, sometimes taking sharp lookouts up and down for any members of their wild kindred who might possibly be lingering about with intention of luring their captive brethren back to their old life of freedom. But no wild ducks were to be seen.

"All here?" asked his uncle, as, just before the fast-closing twilight, Dick whistled his flock to their roost.

"Yes," said Dick, "not a thing has come near them to-day. But I'm going to count them to make sure."

Half a minute later a quick exclamation from Dick brought his uncle again to the ducks.

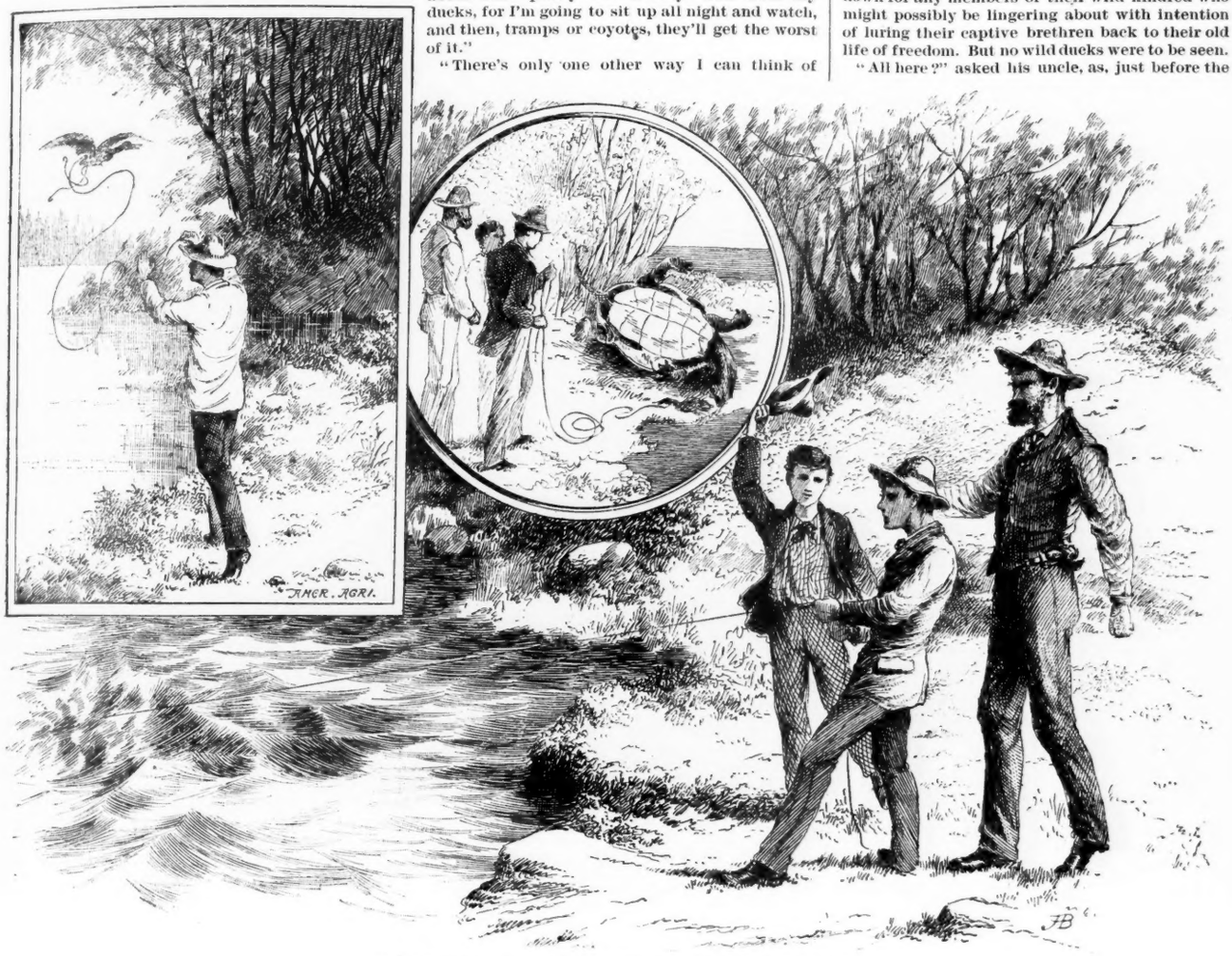
"There's one gone, sure 's I live! And I haven't left 'em since they touched the water, except to go to dinner, and then Rob watched them for me."

Intense chagrin was on Dick's face. He had taken care of the ducks ever since his arrival at his uncle's ranch, and every one of the innocent creatures was dear to him.

"I don't see how one of 'em could have got away without my knowing," he said, sorely puzzled.

"Day and night. You'll have to give up beat," said Rob, half inclined to laugh at his troubled face.

"I won't do that till the last duck's gone," said Dick. "It's something to know that they go by day and not by night."



"SLOW! SLOW! GIVE HIM LINE!"

"Yes, it is," said his uncle.

"I can keep closer watch to-morrow," said Dick.

He went without his books the next day, refused to go to dinner, and rarely took his eyes off the ducks, whether they crept up the low banks or displayed their glistening feathers in the water, in which Dick always thought they looked so much more graceful and beautiful than on land.

"If I only had you in old Connecticut, my pretties," he said, "I wouldn't have to let you swim in such a place as this. I'd have a nice pond for you, with grassy banks all around for you to play on, and then no harm could come to you."

Dick was fond of comparing things in his Eastern home with the far different things which came under his charmed eyes in this wonderland of the setting sun. To hear him any one would fancy he was dissatisfied with the new surroundings, but this would have been a mistake. Dick's heart clung to his old home with an affection which seemed to fear that it might be disloyalty to take too kindly to the new one, but his whole being rejoiced in this new world. He reveled in the perpetual sunlight, and in the exuberant outgrowth which it invited and fostered. He never wearied in discoursing to his cousin on the delights of coasting, skating, and other winter sports, but in his secret heart confessed to himself that he was quite willing to give them up for this blessed immunity from frozen fingers and toes, and the unending struggle to keep the wood-pile replenished.

"What's that?"

Late in the afternoon, when Dick was beginning to despair of any developments which would serve to set the vexed question at rest, and had assured himself by half a dozen counts that not a duck had vanished into air, his watchful eye took heed of a small commotion in the waters. A duck threw up its wings with a faint squawk and the next moment disappeared beneath the water.

Dick gave a shout which brought his uncle, who was at work gathering the last of the season's grapes. After giving an excited account of what he had seen, the boy added:

"I'm going to find out about that to-morrow. It's too late to-night."

In the morning Dick kept his poultry in the yard, but took up one of the ducks and caressed it, his face full of remorseful tenderness.

"You pretty creature, I don't know whether it will kill you or not, but I've got to use one of you to save the others. I'll fix it as carefully as I can."

He passed a strong cord several times around the body of the bird, attaching to it shorter cords, on the ends of which were large hooks. Tying all to a line long enough to reach well out into the stream, he flung the duck into the water.

He had not long to wait. Something beneath the surface seized the duck and pulled it under.

"There she goes! Come and see, quick!"

His loud call soon brought the whole family to the spot.

In great excitement Dick was pulling on his line.

"What is it?" cried Rob.

"I don't know—I haven't seen," said Dick.

"Slow! slow!" said his uncle. "Give him line. Don't hurry or he'll get away from you."

"It's as big as a house!" said Dick. "See him splash. He jerks like fury."

Slowly he drew his prey into the shallow water.

"It's a turtle!" exclaimed his uncle.

"A stunner of a one," said Rob.

The catch was secured in a tiny bay and then Dick went anxiously to see if he could rescue his duck. But the helpless creature, close in the cruel grasp of the tortoise (usually called turtle by the country people), had yielded its innocent life for its brethren's sake.

"I guess you're well paid for your pains," said Dick's uncle, with great satisfaction.

"How much will he weigh?" asked Rob, eagerly, examining the grotesque creature.

"A hundred pounds at least. You can haul him over to the village, and the folks at the hotel will pay you a good price for him."

Learning from Pictures.

H. K. SMITH.

A few years ago two little boys, about two years of age, who belonged to neighboring farms, commenced collecting pictures of live-stock cut from various periodicals. At four years of age they became adept at the cutting, themselves, following closely the outline of the animal. At five they had each collected a large boxful, and so eager were they for new pictures that, upon entering a house, they would first go to the center-table and look over all the papers, and, if they found illustrations quite different from what they already had, they managed to beg some of them. They would spend hours each day looking over these collections, naming them, trading, buying and selling. These boys soon became so expert from this spontaneous kindergarten training work that they could tell a Shorthorn, Jersey, Polled Angus, Hereford, Devon, Alderney, Ayrshire, etc., at sight. But this love of live-stock did not stop with pictures. They are now ten years old, and, as soon as they enter the gates of a fair-ground, they "break" for the stock-pens and stables. Nothing pleases them so much as to see fine sheep, cattle, or horses, but they have no eye for a scrub of any kind. A flock-master was heard to say that he would give a thousand dollars if his boy had such inclinations. One of these boys was seen, lately, to tie his horse to the fence and go into a pasture and examine some Jersey cows with the eye of a connoisseur. See the educating effects of good pictures from agricultural papers.

Four Prizes Worth Ten Dollars.

For the four best lists of answers to the puzzles published below, we will give four prizes, as follows:

For the very best, a nickel watch, either gentlemen's or ladies' size, stem-wind and pendent-set, worth four dollars, and, so far as we know, the best low-priced watch in the market.

For the second best, the Rochester magic lantern, with forty views, lecture and tickets complete; worth three dollars.

For the third best, a triplicate mirror, composed of three mirrors of French plate glass, each 6x6 inches, a most useful article on the dressing case, mantel, or wall; worth two dollars.

For the fourth best, a gentlemen's gold-plated vest chain, well worth one dollar, and usually sold for two dollars.

Puzzle answers must be mailed on or before the 20th of this month to "Puzzle Editor" of the AMERICAN AGRICULTURIST, 751 Broadway, New York.

37. DROP-LETTER PUZZLE.

—i—i—i—i—i—y. (The answer is one word.)

38. ANAGRAM.

A., go get in corn. (One word.)

39. WORD SQUARE.

1, worth; 2, to eat into; 3, aftermath; 4, notions; 5, stretched.

40. LETTER PUZZLES.

1. What letter causes a small word to make a loud noise? (Answer: D-in.)
2. What letter appalls a relative?
3. What letter obliterates a tree?
4. What letter enables skill to take rapid flight?
5. What letter makes a place of commerce lively?
6. What letter makes an article move swiftly?

41. DECAPITATIONS.

Behead to waste and leave a part of the head; behead to make better and leave to repair; behead to wander and leave a waiter; behead to bribe and leave anger; behead imaginary and leave to trade; behead nothing and leave anything; behead to measure and leave a period of time; behead a mark and leave a breed or variety; behead by word of mouth and leave to collect and reduce to order; behead at no time and leave always.

42. MULTIPLICATION.

In the following example letters are used for figures, according to a fixed plan. For instance, if M stands for 3 in one case, it stands for 3 in every case. These letter problems seem very forbidding when one looks at them for the first time, but after a little study you will find them comparatively easy. Required, in the following problem, to state the mathematical answer in figures:

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        L G D V P A
              J S Z
  ---------------
        A A P S D D S
      J P L V S A D
    D A J J Z D V
  ---------------
    J M P L L L J J S
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ANSWERS TO THE MARCH PUZZLES.

18. Praise, raise.
19. Hemi-sphere.
20. Where, here, her, he, ere.
21. Charles of Orleans, born 1391, died 1465.
22. Philadelphia.
23. Waistcoat.
24.
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G N A T
N U D E
A D Z E
T E E M
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25. Septuagenarian.
26.
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                                B O S H B O K
                            B U N N I A N
                        B U S S I N G
                    C U T T E R S
                P A L L E T S
            F U L L E R S
        A R R E A R S
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27. Brace.
28.
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            N
          M O T
        B A S I N
      M A N T L E S
    N O S T A L G I A
      T I L L E R S
        N E G R O
          S I S
            A
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WINNERS OF THE MARCH PRIZES.

The three prizes, worth ten dollars, offered for the best solutions of the March puzzles, are awarded to the following-named puzzlers, whose lists of answers were clearly the best among the several hundred which we received: The first to Belle J. Clarke, Westborough, Mass.; the second to Hattie G. Scott, 7 Richmond street, West, Toronto, P. O., Canada; the third to A. Roy Mize, Carpenter, Madison Co., Ill.

The Advantages of a Country Boy.

EDWARD EGGLESTON.

I have always found it an advantage to me that part of my boyhood was spent on a farm, or rather on several farms. There are so many little domestic arts that a farmer-boy learns and to which the town-bred lad is a stranger. One day, when there happened to be nobody else left on the place here who could milk the cow, and the prospect was that my grandchildren would not have a cup of milk for supper, I was glad to show the skill in that line I had acquired on an Indiana farm. My neighbor, Mrs. Murphy, passing by, exclaimed: "Och, now, Mr. Eggleston, and it isn't ivery gintleman from the city that could find a hand and milk a cow that way!"

I remember to have read of two great poets, Wordsworth and Southey, who once went on an excursion with their publisher, Mr. Cave. All three of them tried in vain to pull the collar off of their horse, but it seemed to them impossible to get it off without taking the horse's head along with it. They finally concluded that the horse's head had swelled after the collar was put on. But a milk-maid came up and turned the collar round, and so pulled it off, to the surprise of the great men, who had not thought of that plan.

There is no reason why a farm-life should not be favorable to education. That which makes an educated man is the habit of thinking about what he sees, hears, or reads. Reading alone will not do it. There were many men working in the stone-quarry with Hugh Miller; but Hugh was the only one of them that thought about anything beyond his wages and his dinner. He studied to find out about the fossil animals which he saw in the rocks under his hand. By the time he had worked in the quarry sixteen years, he had become a great geologist, and the world was delighted to read the books which he wrote.

There was once living in Pennsylvania, before the Revolution, a Quaker farmer by the name of John Bartram. One day in plowing he plucked a violet and pulled it apart. "Here," he said, "are the various parts of this flower, the names of which I do not know, nor their uses. It seems a shame that I have walked over violets and other flowers all my life without knowing anything about them." He then made up his mind that he would study botany. But as all the books on botany at that time were in Latin he had to begin by studying Latin grammar. Nevertheless, he became a very famous botanist before he died, and he remained to his death a very good farmer, and did much to improve the methods of farming in his time.

Not every boy can be a Hugh Miller or a John Bartram, but, whether you have any genius or not, you will be a more useful man by observing these maxims: Learn how to do as many things as you

can, think about what you are doing, and inquire into the things that you see.

Don't be afraid to seem different from others if your seeming different comes from your being more thoughtful or your having more knowledge. A young man once came to ask my advice about his studies. He was a granite-cutter by trade, and his great difficulty was that the particles of granite hurt his eyes so that he was afraid to study at night, lest the two together should injure his sight. I advised him to wear spectacles of plain glass when at work, but I found that he was afraid the other granite-cutters would laugh at him if he did. I don't think he ever learned a great deal, though he had a good mind. Men without grit enough to stand a laugh from their companions are not apt to get on.

Joshua's Rock, Lake George.

A True Story of Mt. St. Bernard Dogs.

JOSEPH WALLACE.

I was one of a small party of tourists who left the Hospice of Mt. St. Bernard early in the morning for Monte Verd. The route was difficult and dangerous, owing to drifting and ice slides the night before, which blocked up the old beaten path. Above us hung huge mountains of ice and snow, cold, cheerless, and threatening, and before us, as far as the eye could reach, a great sea of ice in its cold, gloomy bed, resembling a mountain torrent arrested in its course, with all its billows standing in heaps, defying alike the power of the sun and the assaults of time. Some of our party, more venturesome than the rest, wore crampoons while descending the great walls of ice, and those who were timid or fatigued lagged behind. My cousin, whose eyes suffered from the glare of the snow, was turning an abrupt ledge of rock in order to rest and get a better view of the descending party and the route they were taking, when, suddenly and without warning, the treacherous bank gave way and precipitated us some forty feet down a narrow chasm, out of sight and hearing, and up to our necks in snow.

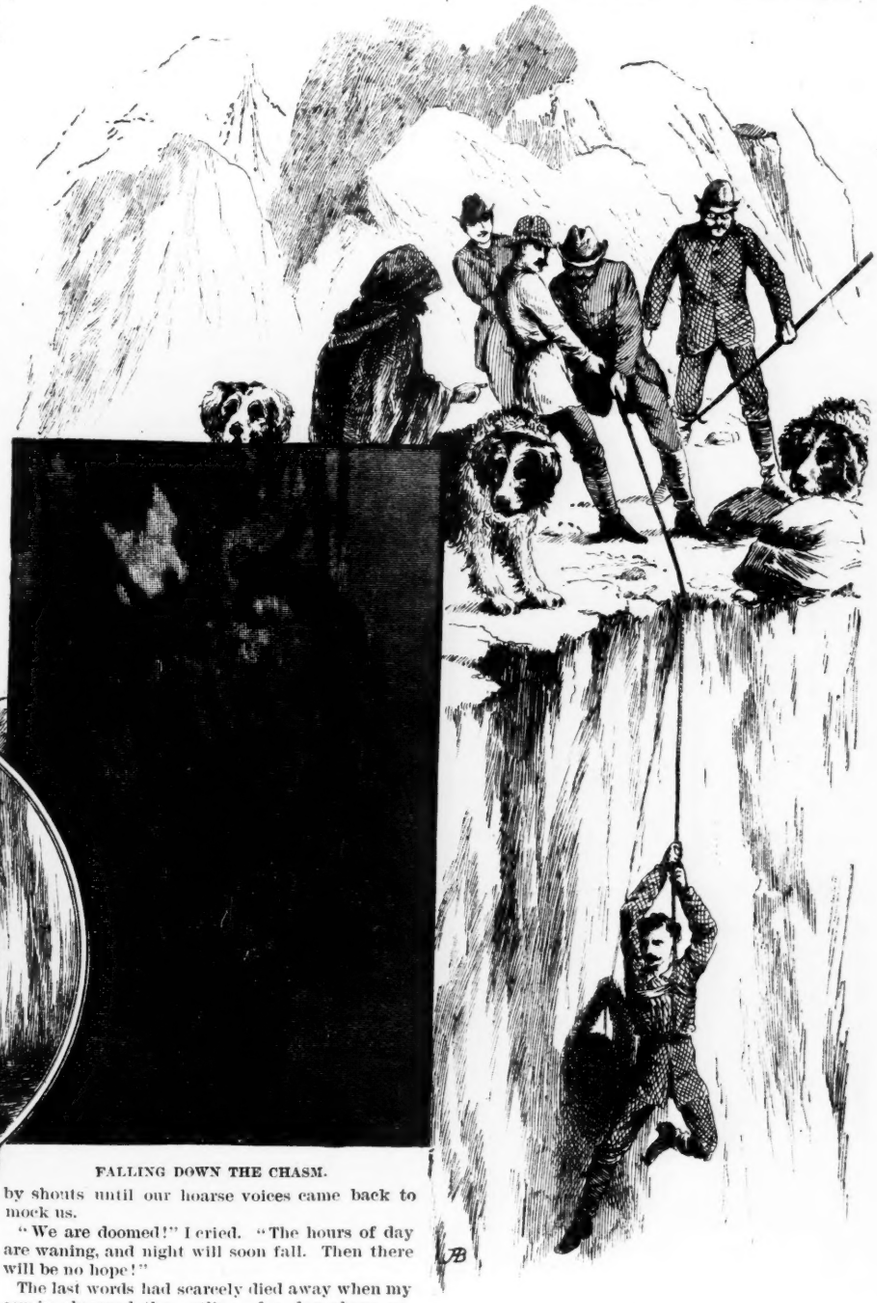
For some moments we were stunned and unconscious of our situation. Slowly we began to realize the doom that awaited us. The whirling, dizzy

IMPRISONED IN THE ALPS.

height from which we passed awed us with its terrific gloom and grandeur. The dreadful prospect of our hopeless fate was intensified by the huge bastions of ice that surrounded us, and the cold, gray sky without a cheering ray. From near and afar we could hear huge avalanches grinding through the icy cliffs, and, again, the sullen roar when they dashed down some deep precipice.

While thus imbedded in the cold, deep snow, every move of hands or body gave me pain. We dare not move lest a false step or change of posture would plunge us out of sight. In the agony of despair, I cried out, but my kinsman, who was an old traveler and inured to danger, was more composed, and busied himself in crushing the snow about him to secure a firmer footing. It was then I thought of home and my dear mother, an only brother and fond relatives far away. In my anxiety I fancied I could hear my mother's voice pray for my deliverance, and see her loving arms reached out to embrace me.

Hours had passed in dreadful suspense, and the afternoon began to wane. My limbs were benumbed from inertness and a drowsy feeling crept over me. By this time my cousin had cleared himself from the surrounding crust and was beside me, rubbing my limbs and endeavoring to infuse a spirit of hope in me. Ever and anon we heard the barking of dogs resound through the icy solitudes and then die away. Loud and long we answered



FALLING DOWN THE CHASM.

by shouts until our hoarse voices came back to mock us.

"We are doomed!" I cried. "The hours of day are waning, and night will soon fall. Then there will be no hope!"

The last words had scarcely died away when my cousin observed the outline of a dog above us. The poor animal seemed glad to have discovered us, and endeavored in every way to reach us, but that was impossible. Knowing the characteristic sagacity of these dogs and their daily mission on those icy mountains, my cousin shouted, "Back, Rover, for help!" The dog understood the command, wagged his tail, gave a sniff and started a peculiar howl, like a hound on the scent. This was an unerring sign of having discovered some traveler in distress, and in this way he communicated the news to the straggling dogs within hearing, and to the inmates of the Hospice.

The sun lingered on the distant hills, and we thought every moment a year. Our eyes were strained in the direction of the rock from which we expected succor. At length the barking of dogs drawing nearer infused some hope. The sound was sweet and comforting to our ears. A chorus of quick yelps now broke forth as four powerful specimens of this grand breed stood abreast looking down upon us, and the fifth soon rejoined the others and carried a coil of rope. While they kept up their incessant yelping, we heard human voices drawing near, and soon four of our party, with a monk in the lead, stood by the rock uncoiling the rope, and fixing the straps for

RESCUED BY DOGS.

our rescue. The rope was let down, my kinsman adjusted the straps around me, and soon we were with our companions, stiff and cold, but alive and thankful.

The rest of my story is soon told. A fever set in and for two weeks these kind and benevolent monks, in turn, watched and prayed, and attended to my wants like comforting angels, till I was perfectly restored to health. Ever since that memorable time the mention of St. Bernard Hospice or dogs awakens in me a feeling of love for the one and of admiration and friendship for the other.

FROM NEAR AND FAR.

Twenty Years of Progress in the South.

Twenty years ago, this part of our country was in the worst possible condition. Our soldiers had returned to their homes barefooted—half-naked, and without money. Weary, footsore, dispirited, and despondent, they came home, ofttimes, to find that home in ruins, a few charred timbers being all there was to serve as landmarks of where the home formerly stood. Fences were likewise burned, the well caved in, the wife often dead, and the children scattered until (in many instances) years were consumed in the almost futile endeavor to gather them once more around the one fireside. With our State under martial law, with 4,000,000 semi-barbarians turned loose among us, placed by law on terms of equality with the whites of the South, utterly incapacitated as they were, both mentally and morally, for this sudden elevation, it seems but little short of a miracle that the Sunny South is as prosperous and happy as we find it to-day. Twenty years ago, empty houses were numerous in every direction. To-day there are more new houses than I ever saw put up in one winter before, and each house has an occupant. Twenty years ago, old sedge-fields were to be seen in every direction. I do not know of a single one to-day. Twenty years ago, there was not a single factory in the South in a prosperous condition; now, millions of capital are invested in manufactures of every description. They are all in a thriving condition, and, instead of running on half-time, are enlarging their facilities, buying more machinery, and daily investing more capital in their business. Anything that can be manufactured out of wood, stone, iron, or cotton can be manufactured cheaper in the South than it can possibly be in the North. The only industry that appears to be standing still, or, rather, retrograding in the South to-day, is agriculture. Even that is progressing in some of its branches. Mississippi has heretofore made a regular business of purchasing horses and mules from Kentucky, Tennessee, and other States. We are now supplying other States with home-raised horses and mules. Herds of pedigreed cattle are to be found in almost every county in the South. Horticulturists are starting large fruit-farms, and canning-factories are following in their wake. Fertilizer-factories, cotton-compresses, and cotton-seed oil-mills are likewise here in good numbers, while our farmers are striving to the utmost of their ability—and with very good success, too—to have their corn-cribs and smoke-houses at home instead of in some distant State. Our State is now furnishing lumber to almost all parts of the world. Yet, in spite of all this progress, agriculture seems to be, if not retrogressive, at a standstill. One cause for this condition of things is the partial failure of the cotton crop of 1889. This came nearer being a total failure than I ever saw before. Another cause is the prevailing low prices obtained for cotton. Still another cause is, that a great portion of the South, from a system of injudicious culture, has become so worn, washed away, and starved that the yield of the cotton crop upon it is often insufficient to pay the cost of production.

The last cause I shall mention is debt. The mortgage system has done and is doing more real and lasting injury to the farmer and his family than all the various causes that could possibly be enumerated. Twenty years ago, cotton sold at thirty cents, and upwards, per pound, and a large quantity of our lands were comparatively fresh. It was then no difficult matter to obtain, under ordinary cultivation, and without the aid of fertilizers of any kind, 500 pounds of lint, or one bale, per acre. This abnormally high price for our staple crop completely demoralized the average cotton-planter, while this artificial condition brought about a system of extravagance and waste that will be felt a hundred years hence. It was in 1870 a cherished theory in political economy that the South should produce cotton, the West hogs, corn, and wheat; while, as Europe and the Eastern States were engaged almost exclusively in manufacturing, and were willing to take our product off our hands at remunerative prices, that we should depend on them exclusively for our manufactured products. This short-sighted and suicidal policy continued until there was but little produced here but cotton, and the bulk of that was mortgaged a year in advance to procure the necessaries of life. This same policy prevailed until the major portion of our agriculturists actually believed that the South was not adapted to anything but cotton, and that it was waste of time to try to raise our "hog and hominy" at home.

This policy would probably have maintained its ascendancy until the present time, had it not been for cotton taking a downward movement, going steadily down until at this time cotton is actually selling as far under the actual cost of production as in 1870 it was selling above cost. Cotton commenced going down fifteen years ago, but the extravagant habits brought about by thirty-cent cotton did not go down in a ratio corresponding with the rapid downward progress of the price of cotton. Debt and consequent mortgages are the inevitable result. The South, with all its progress in the arts and sciences, in manufactures, in mining, in educational facilities, in utilizing the almost inexhaustible supply of magnificent timber, cannot thrive as it could and should do while the agriculturists (who comprise fully seventy-five per cent of its total population) of the best country on earth are hampered by debt and mortgage. Extravagance may have been the original cause of bringing about the existing condition of things.

G. H. TURNER, La Fayette Co., Miss

Farming in Northern Wisconsin.

Some persons have the idea that Northern Wisconsin is so near the North Pole that the mercury falls to say seventy-five degrees below zero and where nothing grows. I would like to give the real facts to all such. Our winters, to be sure, are long and cold, but the mercury rarely falls to twenty degrees below zero, while at other places, from forty to three hundred miles south of us, the mercury on many mornings ranges from thirty to forty-five degrees below zero. The reason for this is that we are on or near the shore of Lake Superior, which never freezes, except among the islands, and which modifies the temperature all the year around. The first difficulty encountered in this country is the dense forest, which, of course, must be chopped down and gotten out of the way somehow before we can have a farm. I have commenced clearing up a farm of eighty acres, and have been asked: "If you are going to farm, why don't you go out West, where, after you have got your land, all you have to do is to hitch your horses to the plow, break it up, and put in your crops?" It may be true; but, when we do get our land cleared, one acre here is worth, in my eyes, half a dozen there. The prices paid for corn, oats, wheat, etc., such as they raise out West, leaves but a small margin for profit in the farmer's pocket, while we up here have a good market near by for all kinds of small fruits and vegetables, which generally bring good prices. Strawberries sell wholesale at fifteen and twenty cents; blackberries and raspberries at about the same. I intend to put my farm into hay, vegetables, and small fruits, which succeed remarkably well here, and I feel confident that I can make it pay.

HARVEY NOURSE, Bayfield Co., Wisconsin.

South Dakota.

While there are some counties in the eastern part of this State that are no doubt in need of help, it is not general throughout the State. There are not more than four paupers in this county, and they are old and afflicted people. Any one able and willing to work can make a comfortable living here. There is plenty of fire-wood and coal in this county. Lumber sells for $8 to $12 per thousand; shingles, $3.50 per thousand. Plenty of water; not as good as in the Eastern and Middle States, but it is healthy. The country is dry and high; a good stock region, especially for horses. Crops are not certain every year without irrigation, but we raise plenty of all kinds of vegetables every year on farms not irrigated. Last summer was unusually dry, but I raised two hundred bushels of potatoes to the acre, without irrigating. Some of the finest breeds of cattle are raised here. There is plenty of government land to be taken. Improved ranches are held at all prices, according to location and improvements. There is a large irrigation ditch, forty miles long, in the county.

S. W. P. SELLERS, Butte Co., South Dakota.

Farming, East and West.

I have been looking about and visiting various parts of this State for saveral weeks. Looking into the subject of comparative returns for labor in Western New York and here, it is my conviction that the intelligent farmer of Western New York is making as good return for labor as the same amount of skill and capital command here. There is among Americans a greater per cent of intelligent men employed in farming here than in New York. The odds are not against the latter as an agricultural State. All things considered, there is little difference.

W. H. GARDNER, Dickinson Co., Iowa.

Agriculture in South Australia.

The AMERICAN AGRICULTURIST is a welcome visitor in these parts where agriculture and agriculturists have not demanded their proper share of attention. There is a very general feeling here that the old system of farming pursued by the earlier settlers is wrong, and some change must be made to avert wholesale failure. Four bushels per acre is not a good enough crop where it might be fifteen. For years the grain has been stripped from the straw, and the latter burnt on the field, allowing all foul seeds to fall to the ground and grow with the next crop, until the grain and weeds are so mixed that it would be difficult to say what the crop would be.

Happily, the agricultural colleges are beginning to open the eyes of the farmers, and they are discussing the subject and inquiring into it. Farmers' associations of various kinds are being formed, and much good will result. But one difficulty stares the farmers in the face—labor! Where can our farmers obtain the labor to work their farms? The fact is, what is called a good farm-hand is one of the rarest objects to be met in South Australia; gold is far more plentiful. Any solution of this question would give joy to our farmers.

After a winter of unusual wet, there is a bountiful hay and wheat harvest. Probably it will exceed any crop on record. But the fruit crops have suffered, and in many cases were poor. All the garden pests have been rampant, as there was no frost to check them. Grapes are a fair crop.

I am greatly pleased to see in the AMERICAN AGRICULTURIST so much matter relating to California and the Pacific coast. We have a great deal of country here similar to the dry parts of California.

W. E. ASH, South Australia.

Liquid Manuring in Germany.

In this part of the world the manure is applied to the garden in liquid form. In fact, this practice is quite general, not only for the garden, but also for lawns and on all hoed crops. In fields, lawns, and other places where it is practicable, we drive with a cart upon which a barrel or cask is fixed, something like the sprinklers used in American cities. In small gardens, and places where it is impracticable to drive, the liquid manure is applied by hand with sprinkling pots. In very dry seasons the liquid manure is diluted with an equal amount of clear water. In fact, when applied directly to foliage, some water must always be added. It is applied on damp days, or immediately after sunset. Such manuring tells more promptly and effectually than any other.

For general use a large cemented pit is constructed near the stables. It is covered with slats, between which are interstices, to permit fluids to drain through into the pit. Upon this all the droppings and litter of the stable are heaped, the liquid manure draining through into the pit. When the heap becomes dry the liquid from the pit is pumped over it to keep it from overheating. Such pits involve some expense, but the cost is soon repaid in the saving of manure and diminished purchases of commercial fertilizers.

For nearly all crops solid manure is best applied as a top-dressing, especially where the ground is moderately level and well-drained. Then, rain and other moisture falling on the surface carries all the soluble portions of the manure to the roots, where alone it can contribute to plant-growth.

J. C. METZGER, Wurtemberg, Germany.

Southwestern Missouri.

I have taken the AMERICAN AGRICULTURIST off and on over thirty years, with which I am well pleased. I moved to southwest Missouri in the fall of 1851, from Genesee Co., N. Y., where I was raised. I took Horace Greeley's advice and went West, and have never had reason to regret the change. We have good schools and church privileges, good society, and a very comfortable climate to live in, where a man can make a good living if he will work. I bought from government 325 acres of land, part for $1.25 an acre and part of it seventy-five cents per acre. We can raise as good wheat as I ever saw grown in the Genesee valley of New York,

and it is a better fruit country, which is saying much. We have no market for fruit. We ship fat cattle and hogs and raise a good deal of wheat and oats. J. ADAMS BROWN, Lawrence Co., Missouri.

Chinese Farming and Farmers.

The Chinese have been noted as farmers for more than four thousand years, and, since 2,200 years before Christ, the Emperor has started the plowing for the nation. The Festival of Spring Plowing is the great event of the Chinese year. At this time his majesty, "The Son of Heaven," after fasting and praying in the temple of heaven, makes sacrifices to the god of agriculture. He comes from the hall of Intense Thought, out into the fields surrounding the temple grounds, and puts his royal long-finger-nailed hands upon the rude plow, painted for the occasion with imperial yellow. Princes of the royal blood assist him while the water-buffalo drags the rude machine through nine furrows, and couriers are sent forth to the farmers throughout the land, to let them know that spring has begun, and that cultivation may commence. At the same time, all over China, the same ceremony is enacted by the chief officers of the various provinces. Every official in China is called upon to be a farmer, and the governors-general, the revenue commissioners, and the justices of the peace act as chief plowmen.

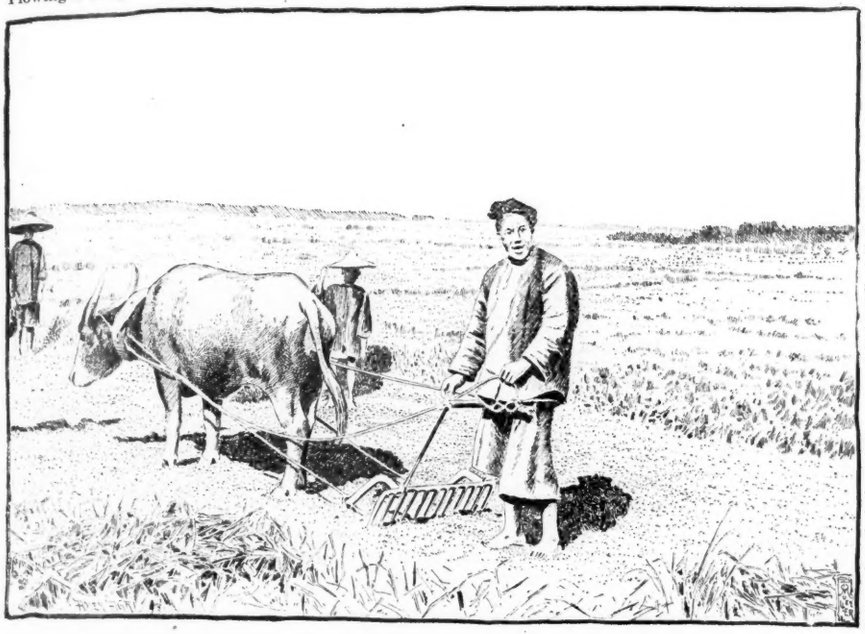


FIG. 1. THE CHINESE HARROW AT WORK.

The water-buffalo, the most ungainly species of the cow genus in existence, is the chief draft-animal of China, and, at the opening of spring, a life-sized paper buffalo is carried, on a table, in a grand procession, with bands of music and with appropriate ceremonies, throughout the cities of the empire, in order to announce to the people that spring has begun. A day or so later the millions of this great agricultural people are hard at work, and the smell of the newly-plowed ground rises from an area half the size of the United States.

The greater part of China is cultivated like a garden, and the people are gardeners rather than farmers. The holdings are very small, ranging in size in some districts from one to ten acres, and there are thousands of families in China who live off one-acre farms. The people, as a rule, in the districts of North and South China, through which I traveled, do not live on the ground that they cultivate, but in villages. The men, women, and children go out in the morning to work, and come home at sunset. I spent a week in traveling along the winding Peiho river in a house-boat, through the great plain of North China, and I sometimes watched the sun rise, from my front door, on the water. At this time the fields, as far as the eye could reach, were spotted with processions of big-hatted, half-naked, yellow-faced men, trotting along with great hoes over their shoulders, and of not a few bare-headed women, some of whom had baskets resting above their Chinese waterfalls. There were few animals to be seen. The fields were not separated by fences, and the only boundary marks were little pieces of granite or sandstone, about a foot high and six inches square, set up at the corners of the fields. The plows in use were of the rudest possible description, consisting of a beam-handle and a share with a wooden stem, which was fastened to a sort of rest at the back. In some cases the share was tipped with iron, but I saw no furrows more than six inches deep, and in some places the plow merely scratched the ground. Chinese farmers measure the depth of a furrow as the Western cowboy does his whiskey or the farmer's wife measures her cloth—a furrow is so many fingers deep. One of these plows costs about two dollars, and the rude rope harness, which is fastened to the neck of the buffalo by a wooden bow-like yoke, cannot be worth more than fifty cents. The work-clothes of the farmer are on the same inexpensive order, consisting, in some cases, of a hat and a waist-cloth, which comes as far down as the knees, leaving the breast, shoulders, and feet bare.

Many of these farmers use spades, or rather the spade-hoe, a long-handled instrument, with a heavy blade about four inches wide, and more than a foot long. Such harrows as I saw were each made up of a heavy stick, to which one row of stout wooden or iron teeth was fastened, and attached to the back of which was a handle, by which the harrower pressed the machine into the ground, in much the same way as our farmer holds his plow. Fig. 1 shows a Chinese farmer, with a harrow drawn by a water-buffalo. I did not see the women harnessed to either plows or harrows, though such instances are said to be common in the more poverty-stricken districts of the interior. There were, however, many women working in the fields in every part of China which I visited, and, at Fuchau, about a thousand miles or more south of Peking, I saw women hoeing and spading, whose wages were just two cents a day. These women were as hardy as the fish-wives of Paris. They had ear-rings as big around as the bottom of a tin cup, and their silver hairpins were a foot long, and often a dozen in number. Not a few of the most gorgeously decorated among them were employed in carrying liquid manure, and I saw one girl, whose hair was decked out with roses, walking through the fields, bearing a load upon her back, the odor of which out-ranked that of a fertilizer factory. In Fig. 2 is seen a Chinese farmer, distributing liquid manure. In the fields near Canton I saw a score of geese following a plow held by a bare-legged, pig-tailed farmer, and drawn by a mangy black buffalo, and in every province I visited I found pigs, chickens, ducks, and geese by the thousands. FRANK G. CARPENTER.

FIG. 2. DISTRIBUTING LIQUID MANURE.

The Poultry Interest in California.

A neglected home industry is that of poultry-raising. Immense sums of money go out from California to buy what is easily produced here. We have a surplus of wheat, and of some horticultural products; for everything else we are more or less in the market. During 1889, $3,000,000 worth of eggs were imported into California. We also imported nearly half a million dollars' worth of dressed poultry. The small farmer has every advantage known for the successful production of eggs and poultry. From one end of California to the other, suitable lands for "egg-ranches" can be had cheaper than almost any other sort of property, the rough foothills being better than the valley; and yet the average farmer will not "putter with chickens." Notwithstanding this heavy importation, the demand increases faster than the supply. Eggs are no cheaper than they were ten years ago. Iowa eggs are sold in country towns here to farmers who run behind worse every year. Take another side of it. If three and a half million dollars were sent from California last year to pay for extra eggs and poultry, there is room for seven hundred more poultry-raisers here doing an average gross business of $5,000 apiece. To divide it up yet more, and scatter the benefits, 14,000 small farmers can add $250 apiece to their average yearly sales before this little egg account ceases to balance against California.

CHARLES H. SHINN, Alameda Co., Cal.

SCIENCE IN FARMING.

Spraying for Noxious Insects.

The spraying-machine has become a recognized part of the equipment of the successful farmer and gardener. The uses to which it can be put are being increased yearly, and the indications now are that within a very few years we shall be able with it to combat successfully the great majority of insects and fungous diseases attacking field, fruit, and vegetable crops. There is a great variety of spraying-machines now on the market, the majority of which do effective work. The main points of a successful outfit are that the pump shall be strong, durable, and easy to work, but throw a forcible stream; that the nozzle shall project a fine spray a considerable distance, and be so constructed that the size and quality of the stream can be regulated at the will of the operator. In these days, when so many people are using or getting ready to use copper-sulphate solutions as fungicides, it is desirable that the parts of the pump touched by the spraying-fluid be made of brass, as the copper solutions corrode iron.

INSECTICIDES TO USE.

A large proportion of the insecticides now in use may be applied with the spraying-machine. The most important of these are the arsenites, Paris green or London purple; but there are also many others, including hellebore, pyrethrum, and kerosene emulsion, which are especially effective when applied in a water spray.

PARIS GREEN is a chemical combination of arsenic and copper, containing about fifty-five per cent of arsenic. It is practically insoluble in water. For spraying apples, pears, cherries of the varieties resembling Early Richmond in foliage, and the so-called foreign varieties of plums, it may be used in the proportion of one ounce to ten gallons of water, or a quarter of a pound to a forty-gallon barrel. It may be used against a large number of insects, including the codlin-moth, plum-curculio, canker-worm, leaf-rollers, potato-beetles, and, in fact, nearly all biting insects infesting plants to which poisons may safely be applied. The Paris-green-and-water mixture must be constantly stirred, to prevent the poison settling to the bottom of the vessel.

LONDON PURPLE contains nearly the same per cent of arsenic as Paris green. It is cheaper and remains in suspension better, but is generally considered to be more liable to scorch foliage. It may be used in the same proportion as Paris green, and is applicable to the same trees and for the same insects.

HELLEBORE is a vegetable poison, but much less dangerous than the mineral arsenical poisons, and it kills insects both by contact and by being eaten. It may be applied in water mixture, in the proportion of one ounce to three gallons, or a pound to a barrel. It is especially valuable for destroying the imported currant-worm, the cherry- and rose-slugs. It usually retails at about twenty-five cents per pound.

KEROSENE EMULSION is made by adding two parts of kerosene to one part of a solution made by dissolving half a pound of hard soap in one gallon of boiling water, and churning the mixture through a force-pump with a rather small nozzle until the whole forms a creamy mass which will thicken into a jelly-like substance on cooling. The soap solution should be hot when the kerosene is added, but, of course, must not be near a fire. The emulsion thus made is to be diluted, before using, with nine parts cold water. This substance destroys a large number of insects, such as the chinch-bug, cabbage-worm, and white grub, and is a comparatively cheap and effective insecticide.

PYRETHRUM is an insecticide made from the powdered flowers of plants of the genus *Pyrethrum*. There are three principal brands upon the market, known as Persian insect-powder, Dalmatian insect-powder, and Buhach, the latter being a California product. The greatest obstacle to the use of pyrethrum has been the difficulty of obtaining the pure, fresh article. If exposed to the air the poisonous principle volatilizes, and the powder is worthless. Hence, dealers should purchase a fresh supply each season, and should keep it in air-tight vessels. Pyrethrum is used mainly either as a dry powder or in water (one ounce to three gallons), but may also be used in the form or a tea, or a decoction, a fume, or an alcoholic extract diluted. For use as a dry powder it may advantageously be diluted with six or eight parts of flour. It is especially excellent for clearing rooms of flies and mosquitoes, and for killing the common cabbage-worm. It is practically harmless to man and the higher animals.

CROPS TO SPRAY.

The following crops are among the more important which may advantageously be sprayed to prevent insect injury:

APPLE.—Spray for codlin-moth and curculios soon after blossoms have fallen, when apples are from the size of a pea to that of a hickory-nut, with London purple or Paris green, one ounce to ten gallons of water. Repeat application in a week or ten days.

PLUM.—Spray foreign varieties (Lombard, Green Gage, etc.), soon after the blossoms have fallen, with London purple or Paris green, one ounce to ten gallons of water. Repeat the applications once or twice at intervals of ten days. Varieties of the Wild Goose class are almost as tender in foliage as the peach, and should be sprayed carefully, and with a weak mixture, if at all.

CHERRY.—If cherries are generally "wormy," spray Early Richmond, and varieties similar in foliage, with London purple or Paris green (one ounce to ten gallons of water) soon after the blossoms fall. Repeat the application once or twice at intervals of a week or ten days.

PEACH.—If sprayed at all, this fruit should be treated very carefully. Do not use London purple, but rather Paris green, seeing that it is kept constantly stirred, and do not use a solution stronger than one ounce to fifteen gallons of water. Spray late in the afternoon.

CURRANT AND GOOSEBERRY.—Spray with hellebore, an ounce to three gallons of water, soon after leaves come out, and as soon as small circular holes appear in the lower leaves. Repeat application in a week or ten days.

CABBAGE.—To destroy the cabbage-worm, spray with pyrethrum, a pound to a barrel of water, at intervals of a week or ten days, from the time the worms appear until the crop is ready to harvest.

POTATO.—Spray for the first brood of potato-beetles, soon after the plants are up, with Paris green or London purple, one ounce to ten gallons. Repeat application when necessary.

Practice with Science.

Co-operative soil tests are being organized more and more extensively by the various stations. Bulletin 12, from Alabama, describes several such tests, indicating that phosphoric acid is the principal ingredient that is deficient in the soils experimented with.

The production of olives for home use and export is increasing in California, both for the production of oil and pickled olives. A test of numerous varieties of the olive is being conducted at the four California stations. Several varieties that have already been tried promise to be much superior to those now grown.

A good point is made by Director Thorne, of the Ohio Station, in answer to some dissatisfaction at the irregular publication of that station's bulletins. He points out that the function of the bulletin is not to collect and publish agricultural news, but to report the results accomplished. Regularity of issue is therefore not to be expected.

The experiment stations may profitably scrutinize the sugar maple, and analyze the saps from various types of this tree under different conditions. Some trees are doubtless much more valuable than others. These trees nurserymen should be encouraged to propagate. The time is coming when trees with records should be as common as is now the case with animals.

The best variety of oats at the Kentucky Station was White Victoria, followed closely by Haggetts, White Siesure, Barley Oats, Welcome, Improved American, and White Schoenen. The earliest planting produced the best yields, both as to grain and straw. Those planted after April 12th were failures. A depth of two inches in planting gave the best results. At the same station, the trench system of planting potatoes produced no marked improvement in yield over the usual method. The yield was in proportion to the weight of seed potatoes used.

At the Wisconsin Station, White Schoenen, Swedish Improved, White Russian, and Huener's Holland oats have proven uniformly productive, as well as meritorious in other particulars, for several years, and they are therefore recommended in the order named. The most productive potatoes were the C. E. Angel Seedling, Rose Beauty, Monarch, Duplex, and Late Beauty of Hebron. But the order of their qualities was just the reverse. Heavy rather than light seeding was found to be best. The cutting off of the seed end was detrimental, and no advantage followed sprinkling the cuttings with plaster before planting them.

In pruning the peach-orchard, at the Alabama Station, the objects were to train each tree to so shade its own body as to prevent sun-scald; to distribute the growth of limbs uniformly, securing symmetry, and have the weight of fruit evenly distributed; to strengthen the limbs by shortening them back so as to enable them to sustain a crop; to reduce the quantity of fruit by judicious shortening of the shoots bearing the fruit buds, and so direct the growth that the crop can be gathered by a man standing on the ground. The same bulletin gives an interesting account of varieties of peaches and plums. The latter are specially commended for profit; they ripen en route to market, acquiring a brilliant color, and being better flavored than when ripening on the tree.

In the early history of the fertilizer problem, chemists were inclined to look upon it as so profound a study that they would not undertake to give formulas for mixing fertilizers. This reticence to impart the precise information that the farmer wants is gradually being overcome. An instance of the growth of a more liberal spirit is found in Bulletin 66, from New Jersey, which furnishes a plain statement of the fertilizer question, and several formulas for mixing agricultural chemicals in proportions theoretically adapted to the several classes of crops. This bulletin recommends home-mixing, where farmers know enough to do it properly, and offers to co-operate with farmers' organizations that wish to undertake home-mixing by analyzing the ingredients to be used.

The annual report of the Arkansas Station consists largely of a summary of the bulletins already sent out. The Cornell annual report contains a simple statement from the head of each department, occupying about one page each, followed by Bulletins 5 to 15 inclusive, and a detailed statement of receipts and expenditures. The Illinois report is still briefer, being compressed into eighteen pages, in which the work undertaken is described, and the four bulletins published during the year are very briefly summarized; every dollar of expense is accounted for in detail. The eighth annual report of the Ohio Station appears as a bulletin, which, when bound with its predecessors, will constitute Vol. 2 of the bulletins of the station. It contains a summary of the work done in the various departments, but the expenses are not itemized; a good index is given of the entire volume.

The sorghum sugar industry had its usual ups and downs last year, as described in the forthcoming bulletin of the United States Department of Agriculture, prepared by the chemist, Dr. Wiley. In Iowa, Minnesota, and other Northern points, the certainty of early frosts is stated to render the cultivation of sorghum for sugar altogether too precarious. The persistently-tried experiments at Rio Grande, New Jersey, which, in 1888, were so promising, seems now to have met perhaps a final reverse, owing to the deterioration of the plant itself, resulting in an insufficient sugar content. It is claimed that the whole year's experience strongly confirms the previous statement that "the region for successful sorghum-growing for sugar is limited to certain sections in Kansas and the Northern portions of Indian Territory." In spite of the many causes of failure, and the obstacles in the way of practical success, there is in the section referred to ample confidence in the future of the business. The feeling that failures were due to avoidable causes does not prevent some who have lost money from making further investments. On the whole, the bulletin is calculated to encourage the advocates of this industry.

Indispensable to Progressive Farming.—Your publication is an indispensable addition to any progressive farmer's stock of reading matter; and it affords me great pleasure to renew my subscription, assuring you that it will always be my aim to obtain additional readers for the AMERICHN AGRICULTURIST among my neighbors.

J. N. MULLER, Orleans Co., La.

Values it Highly.—I do not see how you can afford so much. I value your magazine very highly.

C. L. PHILLIPS, 188 Pearl St., New York City.

FARMING IN FOREIGN LANDS.

A Cork (Ireland) farmer grew $46 worth of flax and $36 worth of turnips on three-quarters of an acre last season. His receipts of $110 per acre are reported as quite remarkable.

Samples of two-rowed barley grown in Canada last year have proved so satisfactory to London experts that Canadian farmers are greatly encouraged in their efforts to gain a better footing in the barley markets of the United Kingdom.

The so-called cocoanut-leaf disease in India is now discovered, by Dr. Henry Trimen, to be caused by the puncture of minute sucking insects, and not, as hitherto believed, due to any parasitic fungus. Sufficient nutrition, aeration, and water-drainage are the remedies suggested.

East Lothian (Scotland) farmers are greatly troubled with rats, one proprietor having killed 3,000 on his two farms. The weasel has been largely introduced, but has not proved very effective. Boys are reaping a harvest, a penny being paid for each rat's tail by the proprietor from whose place it is taken.

A Fifeshire (England) farmer has issued an interesting statistical statement showing a decline in the value of crops grown on his farm during the ten years ended in 1888 of $3,376, or nearly one-half. The farm is situated in a cold district, from 200 to 300 feet above the sea level, consists of ten fields, and has been worked on the five-course rotation of crops.

Butter has been manufactured from the meat of the cocoanut for over a year, in Germany, and it is proving very satisfactory as a substitute for the genuine article. This product sells for thirteen to fifteen cents per pound, and the poor use it very largely on their tables, while the more wealthy employ it for cooking purposes. We are not informed whether it is sold on its merits or under the guise of cow-butter.

Coffee-stealing has become widely prevalent in some parts of India, owing to the non-enforcement of the law enacted in 1878 to protect the coffee industry by collecting passes for all the coffee moved outside the country. Occasionally arrests are made, but the risks of discovery, under the present working of the law, are so slight, and the gains of the receiver so enormous, that the stealing steadily continues, to the great discouragement of planters.

Angora-goat farming is perhaps the most important and profitable industry of the Tasmanian farmer. This industry was introduced into Tasmania about forty years ago, and mohair first appeared as an export ten years later, the quantity shipped being 1,036 pounds. In 1875 the clip reached 1,157,000 pounds, valued at $600,000, while in 1887 7,154,000 pounds of hair were exported, valued at over one million dollars (the price of the hair having been much reduced by this time), besides skins to the value of $500,000.

Italy refuses to admit grape plants from countries which, like the United States, have not adhered to the rules of the anti-phylloxera convention at Berne. Shipments to that country must be accompanied by an officially-certified statement to the effect that the plants are from earth that is at least twenty meters distant from any old vine; that such earth does not contain any vine, and that no vines have been deposited in it; thus making it impossible for the young plants to be contaminated by the phylloxera.

The Metropolitan Trading Association is the name of a new company recently formed in London for the purpose of developing the dead-meat trade between America and England. This trade is already very large, the export of fresh beef from this country to Great Britain alone exceeding eleven and one-half million dollars annually. The new company will ship direct from Galveston, Texas, to London, by specially chartered and fitted steamers, thus avoiding all the risk and half the expense of transit by mail steamers.

Still another textile material bids fair to rival jute. This time it is the pineapple fiber, and a Mr. R. Blechynden, of Calcutta, is attempting to awaken interest to the great economic value of this product. The pineapple has long been cultivated for its fiber in India, while it is manufactured into a cloth in the Philippines, and woven into linen in China. But more recent investigations show that, when subjected to the process of bleaching, the fiber becomes pliant enough to be spun like flax, and by the same machinery. This fiber can be sub-divided into threads of such delicacy as to be barely perceptible, and yet sufficiently strong for any purpose.

The war against binder-twine in the United States last year proved very advantageous for New Zealand flax-growers. A large part of the fifteen thousand tons of flax exported from this latter country in 1889 was shipped to the United States and made into cordage. This sudden increase in the New Zealand flax-export trade has opened the eyes of London merchants, who are anxious to obtain regular statistical information in regard to this industry. The cultivation of flax during the present season in New Zealand is naturally taking on large proportions.

One of the greatest drawbacks to the prosperity of farmers in Burmah, India, is the periodical heavy loss of cattle by the murrain. The disease is spread by cattle driven down from the Shan States from one district to another for sale, when the plague-stricken animals are carelessly allowed to mix with the healthy ones. As there are only seventeen trained veterinary assistants in the whole province, one of the remedies suggested is the reopening of the veterinary college at Rangoon. Another is to increase the tract of grazing land, which, in Lower Burmah particularly, is exceedingly small.

After the expenditure of some twelve millions of dollars in slaughtering "in-contact" stocks, pleuro-pneumonia in England has been run to earth in all but a few centers. Much dissatisfaction has prevailed, however, over the working of the slaughter order, which has occasioned the killing off of many healthy cattle with small beneficial results. Consequently, Minister Chaplin has authorized the slaughter of dairy or store stock to be deferred until such time as the local authority shall deem expedient, with the proviso that such stock shall be duly isolated so as to guard against further spread of the disease.

Owing to the existing law in France which allows farmers and fruit-growers to distill alcohol from the fruit grown on their property without any license or supervision by revenue officers, the production of pure brandy has greatly diminished, while the adulterated product is very plentiful. The production of alcohol from wine has fallen in still larger proportion, one gallon being made where seventeen gallons were produced in 1876, and brandy is being made from treacle, beet-root, potatoes, etc. Dried grapes, soaked in boiling water to the point of fermentation, then mixed with Spanish alcohol and some coloring matter, is extensively sold as wine.

The gathering of eider-down constitutes one of the most profitable employments of Icelanders. This is especially true in the islands Fidey, Fingey, and Ahrey, which are the favorite haunts of the eider ducks. Here they pair and make their nests about the beginning of June. Having chosen the place where she wishes to lay her eggs, the female plucks from her plumage feathers to line her nest, and lays her eggs. Then the eider-down-gatherer carries away both the down and the eggs, in spite of a stout resistance from the unfortunate pair. This process is carried on again and again, until the female duck is stripped nearly bare, when the male comes to her assistance and strips himself in the same way.

The South Australian Bureau of Agriculture, established in April, 1888, has done some excellent work, and is well supported by the agricultural community. Eighteen branch bureaus have been formed throughout the colony, each having a chairman, secretary, and several members, consisting of the best practical agriculturists and scientists, whose principal duty is to find out the needs of the farmers in their locality and report the same to the Central Bureau. Not the least of this department's good work is the establishment of an Arbor Day the first Friday in August of each year. At present, consi lerable attention is being directed to the dairying industry, especially in giving information as to the best methods of managing dairies, and the establishment of co-operative factories on a large scale.

Timber forests in India and France are worked by a system known as the method of selection fellings. This consists in working over annually a large forest area, and felling out a certain number of marketable trees, as well as those which are malformed or diseased. This system answers admirably in France, where most of the forests are of pure silver-fir, pure spruce, or beech mixed with silver-fir and spruce, under all of which are to be found a growth of young trees and seedlings of the same species, which grow up rapidly in the gaps made by felling the mature trees. In India, however, where the forests contain many different and more valuable species of trees, and where the seedlings are very few and not so hardy, this system is harmful, for, while provision is made restricting the number of cubic feet of trees to be felled annually, none whatever is made in regard to natural production.

Cattle-Men in Convention.

What is generally regarded as the last grand national meeting of cattle-growers was held at Fort Worth, Texas, March 12-14, under the name of the Interstate Cattle Raisers' Convention. Delegates were present appointed by the governors of Kansas, Missouri, Illinois, Arizona, New Mexico, Texas, Colorado, Arkansas, Nebraska, Indian Territory, and Wyoming, besides 2,000 other cattle-men from the States named. H. B. Stoddard, of Texas, was chosen president, and L. E. Finch, of Kansas, secretary. A carefully considered address by Col. W. L. Block, of Fort McKavett, Texas, advocated State bureaus of information that might lead up to a cattle-growers' exchange. Congress was asked to establish these bureaus in connection with the Department of Agriculture, their object being stated in the following language:

It is very essential to have a correct record of the available supply and probable demand for live-stock, according to ages and sex, in order to form an intelligent opinion as to the value of the same. Our live-stock industry is so extended that the accumulated shipments from all the producing States and Territories renders it impossible for a shipper to tell what number of live-stock are being moved and being prepared for shipment to the prominent markets of our country from day to day; and we believe, by a system of telegraphic and mail information, the quantity of live-stock shipped and being prepared from each State daily can be easily ascertained, and would be of great assistance to a shipper in avoiding glutted markets. By the coöperation of State bureaus the information above referred to, relating to the available supply and the daily shipments of live-stock and cattle being prepared, can be easily arrived at.

The Department was asked to stamp out the last vestiges of pleuro-pneumonia about New York and Jersey City, thereby giving the government grounds to demand that foreign restrictions be raised. The dealing with Texas fever and the establishment of a fever line was referred wholly to the Department. It was voted in favor of the enactment of laws providing for national inspection to the end that American meats may find a market in any country in the world, with a guarantee of purity and healthfulness through inspection by government officials, but a clause recommending that all legal obstacles to State inspection be removed was rejected, 286 to 115. A fight was made against the commission of fifty cents per head charged by the cattle exchanges irrespective of values, and a reduction was demanded to one per cent, the gross charge to be not less than twenty-five nor more than fifty cents per head. The report on transportation specially commended improved cars, with feeding and watering facilities; demanded a lower rate for stock cattle than beef steers, a reduction in freight rates west of the Mississippi, and urged increased speed on all live-stock trains. The cause of the present depression was assigned as "not altogether the result of over-production, but rather because of a manipulation of combination of certain parties having control of the market, who not only controlled the price to be paid to the producer of the products but dictate and fix the price paid by the consumer." Congress was asked to so legislate as to prevent such combinations as destroy legitimate competition. Car-load shipments, regardless of weights, were approved; the free and unlimited coinage of silver as legal tender for all debts; the repeal of the internal revenue tax of two cents per pound on oleomargarine; a reciprocity treaty with New Mexico; deep-water improvements at Aransas Pass and at Sabine Pass (at an expense of a million and a half dollars, rather than at Galveston at a cost of over six millions); that Indian depredation claims be promptly settled. Another offset was urged to the Big Four, in the establishment of refrigerator slaughter-houses at Fort Worth, Columbus, Dallas, and Victoria, Texas, with sufficient capacity to handle and export the surplus beef from the great Southwest. Such a concern is already established at Columbus, under contracts with an English syndicate.

OUR BASKET

Manure for Cucumbers.—Simon Vaughan, Nova Scotia: Any good complete fertilizer may be used for cucumbers. Poultry-droppings are quite as valuable. The fertilizer should be thoroughly incorporated with the soil in the hills. No crop will respond more readily to heavy manuring than cucumbers, melons, and squashes.

A Milk Dairy.—John Irons, Livingston Co., N. Y.: It is not good or economical to keep cows at pasture on a small farm of good soil in the near vicinity of a large town, which furnishes a market for all the milk. In such a situation it is desirable to raise the largest attainable yield per acre of forage crops. This is done by heavy manuring, good cultivation, and raising silage corn, oats and peas grown together, green rye, clover, millet, and other forage crops. Soil the cows in summer, and keep stabled through the winter. Pasturing is too expensive on land worth from $100 to $200 an acre.

Horse-radish Culture.—C. C. Hiatt, Randolph Co., Ind.: The cultivation of horse-radish is carried on quite extensively by the market-gardeners in the vicinity of all of our larger Eastern cities, and we presume near most of the Western. The roots are raised and sold to those who grate and bottle the prepared product for use. Dealers in agricultural implements supply graters, either hand-size or to be run with horse- or steam-power. We cannot tell whether or not you could make the business a profitable one, but we presume those who have been long engaged in it make a profit, else they would not continue in the business. Perhaps it would be well to inquire of dealers in regard to the supply and demand for the article before engaging extensively in this, to you, "new industry."

Fertilizer for Orchard.—J. B., Yarmouth, Nova Scotia: For an orchard on light, gravelly land, where stable-manure and wood-ashes cannot easily be obtained, any of the standard commercial fertilizers may be used. An application of German potash salts, followed by a growth of clover, top-dressed with plaster, and plowed under, would be good treatment, while the orchard is young.

Gathering Sumac.—J. K. Hawthorn, Conecuh Co., Ala.: Gathering sumac leaves for tanning purposes is a rather limited industry in this country, but in some of the Middle and Southern States a few tons are occasionally gathered by children and the poor who may have little else to do, thereby making a few dollars when they would otherwise be idle. But no one can earn what would be usually considered even fair wages in gathering sumac. The leaves must be gathered when green before frost, dried in the shade, then taken to a mill built or arranged for the purpose, and there ground, after which the powder is put into sacks, and sent to market. There, pulverized leaves of sumac may bring thirty to forty dollars a ton, and as one may readily imagine that it will take a large heap of green leaves to make one ton of the ground sumac, labor would have to be very plentiful and the laborer work for small wages to share any profit in the business.

Basswood from Seed.—C. F. Miller, Rice Co., Minn.: In raising basswood from seed, a little shade is usually necessary while the plants are young and making their second and third set of leaves. Gather the seed in the fall as soon as ripe, and then mix in about as much pure sand as there is of seed. Place all in boxes and then bury in some dry place in the open ground, covering only a few inches deep, or deep enough to keep out the mice and prevent alternate freezing and thawings. In spring, as soon as the weather is favorable, sow seed and sand together in wide drills, made with a hoe, and about the width of the blade. Cover with fine, light soil to the depth of a half-inch or a little more, then spread brush along over the rows, just thick enough to give a little shade to the young plants. When the plants are four or five inches high, remove the brush and give frequent cultivation during the summer. Wild rabbits and many other animals are fond of young basswood plants, and this is probably why so few seedling trees are found in the woods.

Wire-Worms and Cut-Worms.—H. T. Pauling, Vermilion Co., Ill.: The common species of the cut-worm severs the stalks of the young corn either above or just underneath the surface of the ground; consequently, anything applied to the seed or put in the hill at the time of planting would not in any way interfere with the ravages of this pest. In England these worms are called "surface-worms," because they work on or near the surface, and always at night; hiding during the day near the plants they have been feeding upon. If hunted early in the morning they may be readily found and killed. The different species of the wire-worm work on the young sprouting corn and roots, and if the seed is well tarred before planting, the worms are not likely to trouble it. A half pint of warm pine-tar stirred into a bushel of corn until every kernel is lightly coated with it, will not only prevent the crows from pulling it up but also check the work of the wire-worms. Wire-worms may be trapped with pieces of raw potatoes placed near the hills and lightly covered with earth.

Jamaica Ginger.—Bessie, Passaic, N. J.: The native country of ginger is not positively known, but it is supposed to be India. It is now cultivated in nearly all tropical countries and largely used as a condiment, and in its green state it is sometimes employed in making an excellent preserve. It is readily grown in pots kept in a warm room or greenhouse. As the island of Jamaica produces the best quality of ginger known in commerce, the name "Jamaica Ginger" has become the favorite name for all the different varieties and qualities sold in the markets of Europe and America.

Large Leaves.—Miss D. B. C., Baltimore, Md.: The common *Caladium esculentum*, as well as some of the varieties of the *Canna*, produce very large leaves when grown in very rich soil, but they are small when compared with those of the Ensete of Abyssinia. A plant of this species of the Banana, raised in Kew Gardens (Eng.), a few years ago, had leaves seventeen feet long by three feet four inches wide. It is supposed that this plant produces the longest entire leaf of any vegetable organism known.

Grafting and Grafting-Wax.—H. C. Peck, Bacon Hill, Saratoga Co., N. Y.: The implements needed for grafting apple trees are: a small saw, for cutting off the branches for grafting; a good, strong knife with a thick back to make clefts in the stock; a small knife, kept very sharp, with which to prepare the cions; a grafting-wedge and chisel, and a mallet. The grafting should be done as soon as all danger of severe frosts is past and the buds show signs of swelling on the trees to be grafted. The wood to be used for cions should be cut before the buds swell, and be stored in damp sawdust or moss in a cool cellar. There are many compositions used as a grafting-wax, but we have found none better than one made of the following: Four parts common rosin, two parts of beeswax, and one part common tallow melted together, and when cool worked up into convenient rolls. If it is to be used in cool weather add a little more tallow. Some of this wax may be spread when warm on cloth, and this cut into strips for wrapping around large stocks.

Squash-Bugs.—J. R. Hanchett, Lenawee Co., Mich.: The common squash-bug (*Coreus tristis*) is one of the greatest pests with which the cultivators of squashes and pumpkins have to contend. In many localities they are so abundant that it is almost impossible to keep a vine alive until the fruit matures. We have ourselves tried nearly everything that has been recommended for driving away or poisoning these insects without finding a single one of any use. As the squash-bug and all members of the same family live by sucking the juices of the plants upon which they feed, and not by chewing or masticating their food, as with the beetle tribe, we cannot poison them with Paris green and similar insecticides. We have tried coal tar, spirits of turpentine, kerosene oil, and other strong-smelling liquids, without avail. This pest can, however, be subdued by going over the vines daily as soon as the bugs appear, and gather them by hand or crush them with the foot. The eggs are deposited on the under side of the leaves in clusters, and these should be carefully scraped off into a shallow dish filled with kerosene oil, or spirits of turpentine.

The Best Breed.—W. H. C. Thomas, Muskingum Co., Ohio: In deciding what kind of colt to breed for, go to a good pure-bred stallion of some kind. Avoid a cheap horse at any price, or no price at all; but unless the mare has an uncommonly good trotting pedigree it would be foolish to go to a fashionable trotting sire at a fancy price. Heavy draft-horses, of Scotch, English, or French breeds and their grades, always find sale. Coach horses, French, Cleveland Bay, and German, and good American road-horses, are also in demand. A half-bred colt of any one of these breeds, if sound and well cared-for, will possess actual market value, and cost no more to raise than a scrub.

Diseased Geraniums.—G. C. C., Columbia Cross Roads, Pa.: The geranium leaves you send are small and thin, and this may be due to want of sunlight or because the plants have been given so much water that the roots have become diseased. The wilting of the plants at night would certainly indicate unhealthy roots. Knock out the plants, shake off the soil, and examine the roots. If you find any that are black and decaying, cut them off, and then put the plants in smaller pots, and give good drainage, adding about one-fourth part of good, sharp sand to the soil used in potting. Many persons use too much coarse, rank manure in potting house-plants and then use water far too freely to insure a healthy growth during the winter months. It is well to give geraniums plenty of pot-room and rich soil, but there is danger in carrying the forcing processes too far, thereby killing the plants.

Stable Manure for a Lawn.—R. L. H., Nashville, Tenn.: Instead of using stable manure on your lawn, try some of the artificial fertilizers, say 500 pounds superphosphate and 500 pounds nitrate of soda per acre, or half a ton of some high-grade complete fertilizer. The better way is to sow the superphosphate in the autumn and half the nitrate early in spring and the other half from time to time during rainy weather in summer. Before sowing the nitrate, it should be run through a sieve (one used for sifting coal-ashes will answer) and all lumps be broken up fine.

Field-Mice.—F. Kohberts, Bergen Co., N. J.: The common field-mice of our Eastern States are often very destructive to roots, tubers, and plants grown in hotbeds during the winter. They are not readily caught in traps, because they are not only very intelligent, but usually can find food without exposing themselves to danger in the form of traps. Wheat, corn, and oats may be poisoned by soaking in Fowler's solution of arsenic, or corrosive sublimate, then dried again, after which scatter in the burrow frequented by the mice. We have also used phosphorus paste, spread upon bread, with excellent results for both rats and mice. But in using all such poisons great care is required to prevent the pets of the family getting at the poison. What there is about phosphorus to attract any animal we cannot understand; still, rats, mice, dogs, and cats will lick it from a piece of bread if left where they can reach it, and death soon follows. Field-mice are certain to nibble at it if small bits on bread are placed in their burrows or places they frequent.

Bone-Dust and Ashes on a Lawn.—D. M. B., Michigan, proposes to sow nitrate of soda on his lawn and garden, and asks if he had better use bone-dust and ashes at the same time. Sow the nitrate broadcast in the spring, and the next autumn apply the bone-dust and ashes. Better still, use superphosphate—say 500 pounds per acre—instead of the bone-dust.

Fertilizers for Strawberries.—Owen L. Clark, St. Clair Co., Mich., writes us: "I can obtain sulphate of ammonia, containing twenty-four per cent of ammonia, for three and a half cents per pound; and nitrate of soda, guaranteed to contain

fourteen per cent of ammonia, for three cents per pound. Which had I better use on strawberries, taking price into consideration?" Nitrate of soda should contain sixteen per cent of nitrogen, equal to nearly nineteen and a half per cent of ammonia. At the price you name, nineteen and a half pounds of ammonia in nitrate of soda would cost $3, or fifteen and a third cents per pound. In sulphate of ammonia, twenty-four pounds of ammonia would cost you $3.50, or a little over fourteen and a half cents per pound. Other things being equal, therefore, the sulphate of ammonia is the cheaper fertilizer. In the nitrate of soda, the nitrogen is in a condition to be immediately taken up by the plants, while that in the sulphate of ammonia must be converted into nitrate in the soil before the plants can use it. In warm, moist, well-drained, and porous soil, with no lack of lime, this change takes place quite rapidly, but while the land is cold, early in the spring, the change proceeds very slowly. For early crops, therefore, the nitrate is better than the ammonia. Furthermore, the prices you give are exceptional. In the general market, nitrate of soda is a much cheaper source of nitrogen than sulphate of ammonia.

Florida Phosphate Rock.—Dr. Charles U. Shephard writes us from Ocala, Fla.: As yet it is premature to form a definite opinion as to the actual size and value of the phosphate deposits, all this grade being very high (extending to even eighty-five per cent bone phosphate) there can be no doubt. They owe their origin, in all probability, to ancient guano beds, whose lixiviation caused the undulating carbonate of lime to be converted into phosphate. The great question is, whether the numerous pockets already discovered may afford adequate surface. Time and work must solve this problem.

Removing Stones.—Joseph E. Miller, Berrien Co., Mich.: The directions on Page 132 of the AMERICAN AGRICULTURIST for removing stones from the surface by burying them was intended to apply to land which is to be seeded down to grass. When beneath the surface they are out of the way of the mowing-machine. Stones do not increase in size by growth, any more than does a brick chimney.

Applying Barn-yard Manure.—H. D. Stewart, Perry Co., Pa.: Gross-feeding crops, like corn, millet, sorghum, and broom-corn, respond the most readily to direct applications of barn-yard manure. If corn or potatoes are to be planted on an inverted sod, it is best to apply the manure directly to the sod before it is broken up. The experiences with prize crops, last year, were all adverse to the practice of applying stable manure directly to oats, and the same is generally true of winter wheat. This is mainly on account of the open, porous condition in which it leaves the seed-bed, and probably rolling would go far to overcome the difficulty. Under most circumstances, it is best to draw out the manure directly from the stable.

Computing Corn in the Ear.—Ellis Blackwell, Douglas Co., Oregon, writes: To measure corn or other grain in bulk, compute the cubic area of the heap or receptacle and divide by the number of cubic inches in a bushel. For corn in the ear, allow two bushels for one. A struck bushel contains 2,150 inches; a heaped bushel 2,688 inches. A wagon-box ten feet long and three feet wide contains a bushel of ear corn for each inch in depth.

Ensilage for Hogs.—J. Schmid, Schuyler Co., Missouri: Silage of clover and corn is excellent for hogs. They eat it greedily when accustomed to it and maintain far better growth than on corn or corn-meal. Where corn silage is fed without clover, it is better to mix it with bran, for store hogs, and equal parts of bran and corn-meal, in case it is desired to keep them in a little more than growing condition.

The Best Barley.—J. H., Newark, N. J., writes: Having had a long experience in buying and handling barley, I can speak with some confidence. Canada six-rowed is worth more than two-rowed in every way for malting. It grows better on the malting-floor, yields better results per bushel, imparts a better flavor to the beer, and the beer settles quicker, than that from any other. Two-rowed barley, though less valuable for malting, is the most valuable for feed. Great expectations were raised for the German, French, and other imported barley, but it was proved by many trials that no barley from any other part of the world is equal, for malting purposes, to the four- or six-rowed Canadian. There is, however, but a small amount of Canadian barley in market in proportion to the immense quantities raised in the West. The Western barley is better and better every year, as the facilities for harvesting and storage are increased.

Self-Sucking Cow.—John Rapparlie, Lucas Co., Ohio: Page 258 of this issue has an illustration of a very effective device for preventing self-sucking. Several other contrivances for the purpose were illustrated on Page 242 of the AMERICAN AGRICULTURIST for 1887.

Temperature for Incubator.—Subscriber, Aiken Co., South Carolina: The incubator should be kept as near 102° Fahrenheit as possible. Upon no account let it run lower than 99° or higher than 104°.

A Large Circulation.—According to George P. Rowell & Co's new American *Newspaper Directory* for 1890, there are fifty-five papers having actual average editions exceeding 100,000 copies each issue. The circulation of these is more than one-sixth of the total issues of all the 17,760 papers which are published. The same authority states that the AMERICAN AGRICULTURIST is one of the fifty-five—a fact that advertisers readily testify to because of their rich returns from announcements in the "old reliable AMERICAN AGRICULTURIST."

Care of Fresh Cows.—T. Richardson, Jefferson Co., West Virginia: Do not keep a cow in stanchions up to the time of calving, but give her a roomy box-stall or pen a few days in advance, so that she may become contented in it. The best dairymen and breeders remove the calf out of sight and hearing of the cow, as soon as it is dry. The cow is milked regularly, the milk warmed and fed to the calf. The trouble of separating the cow and calf increases every day they are left together, and it is all saved by the above practice.

An Excellent Practice.—M. E. Swan, Dawson Co., Nebraska, writes: I save all the numbers of the AMERICAN AGRICULTURIST, and, in looking them over, I have a sheet of paper at hand, on which I note any matter to which it may be desirable to refer, setting down the subject, the year, month, and page where it is found. This makes a topical index, which supplements the annual published index, being more minute, as that gives only the titles of articles, and this the special points to which reference is made subsequently.

Nitrate of Soda on Mucky Land.—G. L. B., Salisbury, Vt., writes: "I have forty acres of what was once a cedar swamp. It is now well drained, and, when manured, grows good grass. Will nitrate of soda take the place of manure?" Probably not. On such land phosphates and wood ashes or lime would give better crops of grass in proportion to cost than nitrate of soda alone. If you can get it for $18 per ton, Thomas slag, or so-called "phosphite meal," will probably pay better than anything else you can use.

Fertilizers for Corn on Abandoned Farms.—Caspar Hiller, Lancaster Co., Pa., writes us that he knows of old abandoned farms covered with briars and weeds, and too poor to grow fifteen bushels of corn per acre, that have been made to yield over fifty bushels of corn per acre by a single application of phosphoric acid alone in the form of dissolved S. C. rock phosphate, and after the corn was harvested, without any further application, a fair crop of wheat and clover was obtained. He asks: "Where did the plants get their nitrogen?" From the soil and subsoil. The abandoned farm had not been half-worked, and when it came into the hands of a man of energy and brains, who had faith enough to use phosphates, it was probably well-plowed and well-cultivated, and this, aided by the phosphates, enabled the corn, wheat, and clover to obtain food from the stores of plant-food lying dormant in the soil. No potash and no nitrogen were furnished by the rock phosphate, and it is certainly no more difficult to understand how the plants could get nitrogen from the soil than how they could get potash; and it is certain they cannot get potash from the atmosphere. Furthermore, unless more than the ordinary dressing of phosphates was used it is not at all likely that the phosphates furnished half as much phosphoric acid as the crop of corn, wheat, and clover contained. Where did the plants get this phosphoric acid? They got it from the soil, and the small quantity of soluble phosphoric acid in the manure gave the plants a good start and favored the growth of roots, and the roots were able to find and appropriate the plant-food existing in this "abandoned farm." There is no such thing, strictly speaking, as an "exhausted soil." There may be barren land, but, if a farm has ever been productive, it may run down and cease to be profitable, and, therefore, be abandoned, but it is impossible for it to be exhausted. The facts mentioned by Mr. Hiller are of great importance, and show that it need not be a costly thing to renovate an abandoned farm.

Fertilizers for Corn and Millet.—L. V. Morrel, Pitt Co., N. C., has some swamp land that he desires to plant with corn and part of it with German millet, and asks what commercial fertilizers he can use with profit. Drained swamp land ought to be rich enough to produce a good crop of corn or millet without manure. Probably 200 pounds of acid phosphate per acre would pay by giving the plants a good start. Mr. M. asks if nitrate of soda can be used with profit on such land. On corn or millet, no—not because it will not increase the crop, but because the crops sell at too low a price. Nitrate will pay better on cotton, because cotton commands a higher price.

Curious Beans.—J. A. Browne, Orange Co., Fla.: The large gray bean, with dark-colored pods, appears to be unknown to our seedsmen here, and we have failed to find anything like it in the seed-stores. We will plant the few you have sent, and see if they prove as good here as in Florida.

Naked Oats.—J. T., Goshen, N. Y.: The specimen of oats you send are known by several names, such as "Bohemian," "Chinese Hulless," but its botanical name is *Avena nuda*, or naked oat. It is one of the oldest varieties in cultivation, and is figured and described in "Gerarde's Herbal," published in 1597. It has often been brought out as new, and sold at a high price until some one exposed the cheat. The grain falls from the hulls in thrashing, the same as wheat and rye, but this is a fault rather than a merit, because, when the crop is ripe, it is difficult to gather without considerable loss of grain.

The Agricultural Depression.—The editorial on this subject in the AMERICAN AGRICULTURIST for April has been widely approved; also some of the points made by the farmers (notably Prof. Henry) who contributed to the accompanying symposium. It is, of course, understood that the contributors presented their individual opinions, and that, in such cases, this magazine does not hold itself as indorsing or responsible for the views expressed. On the tariff aspect of the case, an equal number were invited to present each side, but the advocates of protection failed to respond because they understood that the government was about to issue a report on the subject. In this document the statistician, James R. Dodge, points to overproduction as the great cause, and diversified agriculture as the best remedy. John M. Lane, of Carroll Co., Ill., condemns unqualifiedly the reasons put forward by the democratic statesmen, while he regards the advice of Messrs. Powell, Brigham, and Hale as misleading. The proposed panacea of more farmers in the National and State Legislatures Mr. Lane speaks of as "silly twaddle." He adds: "Prof. Henry looks at the matter from the correct standpoint, and, as far as his paper goes, is correct in his arguments and reasoning, which should open the eyes of those whose eyes have been blinded with quackery, and bogus causes and remedies. The AMERICAN AGRICULTURIST's editorial statements contain much to commend and little to condemn. They are right as to the land policy of the general government and also as to its immigration policy; but they are wrong as to the effects of the much-talked-about and but very-shadowy-if-at-all real trusts and combinations. The scheme of the Geological Survey for reclaiming the arid regions, if carried out, will do more to depress agriculture than anything that has been done in the last century. To reclaim from twenty to fifty millions of acres of arid land will be simply to dump into the already congested market from four hundred million to two billion bushels more of grain."

Mr. Lane also points out that "we pay too high wages to our farm laborers. We buy too costly implements, and allow them to go to wreck. We spend too much for fancy stock. We waste too much in every way, especially in the crop after it is grown, and in feeding it out. We spend too much money for needless luxuries and for show. We pay out millions for the food we should grow. I know of hundreds of farmers in this State who buy all the butter, eggs, potatoes, meat, fruit and vegetables that are consumed on their farms. They grow wheat, oats, corn, or live-stock to sell at starvation prices, so as to pay the merchant for the above articles that should be produced on the farm. The remedy speaks for itself. It is largely in our own hands. But before doing anything else, we should try to become intelligent farmers. Let us study to attain this position rather than spend our time in studying 'political economy' or the 'isms' of political quacks or interested would-be leaders." Thomas E. Hill, Chicago, regards labor-saving machinery as the chief cause of agricultural depression, and the eight-hour day's work as the remedy. Mr. Hill predicts an era of great prosperity for agriculture during the next five years, owing to the general adoption of the eight-hour system and the employment of labor on government works, on elevated and cable railways, and in manufactures that are being stimulated by the investment of millions of foreign capital. James K. Reeve points out that the middlemen absorb profits that farmers might obtain if, by coöperation, they sold directly to consumers, and bought farm supplies in large quantities, for cash, from first hands. Gideon H. Allen, of Kansas, dissents from the free-trade view; thinks many immigrants go into other occupations, and thus increase the market for farm-products; regards our land policy as partly to blame, but thinks there is no over-production even of staple crops if their distribution was complete. With a greater diversity of crops, grown more equally over the country, he justly thinks farmers everywhere would be better off; says truly that by better methods they must work out their own salvation from past errors and extravagances, and concludes with the true remark that we should grow all the agricultural produce consumed here, and also seek a right solution of the problem of internal transportation. James Miller, Yates Co., N. Y., believes in better farming, but also urges protection against foreign wool, Canadian barley, and other produce that now undersells us. T. P. Dunham, Kalamazoo Co., Mich., refers to the condition of the farmers of India (faithfully described in our April number) as the state to which American agriculture would be reduced if the theories advanced by Messrs. Carlisle, Hatch, and others were carried out. He refers to the low-tariff period years ago, when farm-produce and all labor sold at ridiculously low prices, but clothing, hardware, and other supplies cost several times more than they do to-day. The AMERICAN AGRICULTURIST thinks that whatever may be the conflicting views as to the bearing of the tariff on agricultural depression, all will agree upon the necessity of better farming in all that the word implies, including the application of level-headed business principles to every department of farm operations.

Pasture or Meadow on Overflowed Land.—Mr. George Clendon, Louisa Co., Va., has fifty acres of land liable to overflow from a creek. He has grown large crops of corn and hay. The fine mud deposited by the water is liable to damage the hay. "It will make a grand pasture," he writes, "but I dislike to make a pasture of it, for the corn and hay, when we can save them, are very fine indeed. Now, how much butter can I get per acre? Prof. Brown, of Canada, got 4,000 pounds of milk per acre from a first-class pasture. That pays. If I could get half that amount I should think it good." It is difficult to answer a question of this kind. It is not the total quantity of grass a pasture will produce that determines its value, but quantity and quality combined—especially quality. Furthermore, in a pasture we require a steady supply of abundant food. Many pastures will furnish an excess in June and fail to produce enough a few weeks later. The proper management of a pasture requires much experience and good judgment. As a rule, in this country, more money can be got from an acre of hay and pasture combined than from pasture alone. Our climate and machinery for converting grass into hay are the best in the world. In a case of this kind the probabilities are that instead of using the whole fifty acres for a pasture for cows the better plan would be to grow hay and corn on a considerable portion of it, and, as far as possible, adopt winter dairying. Grain, cotton-seed cake, and other rich foods are cheap, and their use with the hay and corn fodder would be decidedly profitable.

Varieties of Carrots.—O. L. C., St. Clair Co., Mich., asks if the oxheart carrot will yield as much as the half-long or the long orange. Probably not, though much depends on the soil. It is far more work to harvest the long varieties than the half-long, and still more than the oxheart. The latter resembles a heart in shape and is nearly as broad as it is long. It is a handsome and attractive carrot, yields well, is easily harvested, and is of the best quality.

Alsike Clover on Bottom-Land.—J. H. Uhle, Herkimer Co., N. Y., writes us: "I have a piece of river-bottom land, naturally wet, but drained by ditches. It was in corn and potatoes last year. I wish to seed it this spring. I have thought alsike clover alone would be best. Am I right, or should I sow timothy with the alsike?" On our own farm we have always sown timothy with the alsike. We usually sow the timothy in the fall and the alsike in the spring. If both are sown in the spring, sow more alsike than if the timothy is sown in the fall, say four quarts alsike and five quarts timothy per acre, and, if the land was not too wet, we would put on four quarts of red clover also. Occasionally we have had a good catch of red clover on such land and a great crop of hay.

Feeding Calves.—Mrs. A. T. Jamison, Rutland Co., Vt., has a fine heifer calf that is just weaned so that she can send it away. She wishes to know if it should have anything but hay. It is a good plan to give young calves a few dry oats at midday when they are fed with milk night and morning. To induce them to chew the oats, just moisten the oats with a little milk drawn from the cow; but never throw oats in the milk, as the calves are liable to choke, and, even if they swallow them, they will not digest, as milk goes directly to the fourth stomach. To be properly digested, oats must be masticated and pass through all of the four stomachs of bovines. Slops given to cows, if too thin, do less good, because they do not go through the natural digestive channels established by nature.

How to Get Manure Out of the Land.—A Subscriber, from Ontario, Canada, writes us: "In the last issue of the AMERICAN AGRICULTURIST Joseph Harris says to the effect, that 'nitrate of soda and superphosphates used on land will enlarge the yield and turn some of the value of the land into money, or, as I would put it, enable one to draw on his bank account.' Now, my case is this: The farm that I am on I rented for ten years, and the landlord promised to renew the lease for ten years more. Consequently, I thought myself perfectly safe in building up the land as much as I could (and it was very poor when I went on it); so I spared neither trouble, work, nor expense to make it as good as I possibly could, with the result that the first five years, in place of making money, I was considerably behind; but the next five years, which has just elapsed, I have a little more than repaid myself and paid the rents, but made nothing to speak of. But now, when I have the farm in such good shape that every acre under cultivation will grow a good crop of wheat or most anything else, the landlord will only renew the lease for two years, at an advanced rent, and is then going to work it himself. Therefore, I write for information to know how to get some of my own money back in the next two years, and put it into a farm of my own." The soil is very conservative. If nature puts manure into it in the form of leaves, roots, grass, or weeds, the soil holds it for ages. The object of agriculture is to get this accumulated store of plant-food into crops that will furnish food for man and beast; crops that will sell and pay us for our labor. And, when we plow under clover, grass, roots, and barn-yard manure, the soil tries hard to hold the plant-food. Not only is this true of organic matter, like barn-yard manure, but of the three most costly ingredients of plant-food—nitrogen, phosphoric acid, and potash. If a solution of ammonia, phosphoric acid, and potash is poured on the land, it is speedily converted into insoluble forms, and cannot all be washed out till they are slowly acted upon by means not necessary here to describe. Suffice it to say, that a farmer must be careful how he puts manure into another man's land. A tenant can let a farm run down very rapidly, but that will not help him. If he lets it run to weeds, the weeds will hold the manure. He will get none of it. Probably the most likely means of getting the manure out of the land would be to sow it to wheat year after year. And, on the land not dry enough for that, sow oats, or millet, or Hungarian grass for seed. In nearly all cases, however, when a farm is rented there is a clause in the lease preventing such practices.

New Cattle for the Range.—C. J. Jones, of Kansas, now reports the complete success of his experiment in crossing buffalo bulls on Galloway cows, previously described in the AMERICAN AGRICULTURIST (Page 561, 1888). "The calves stand all kinds of weather without artificial food or shelter, and never turn their tails to the blizzard. Their robes are equal to the black bear." We heve reliable advices, however, that great loss has been occasioned by the death of the cows in parturition.

An Impending Change.—An interesting report from the only cheese-factory in Texas is made by its proprietor, Col. A. J. Rogers. He says cheese can be made better and cheaper in Texas than in any other State, and that his product wholesaled for twelve and a half cents per pound. Col. Rogers is confident that butter and cheese factories can be successfully operated over a large part of the Lone-Star State, and even predicts that the dairy would some day be of more importance than the beef-cattle industry. It is, undoubtedly, the time for the South and Southwest to diversify their agriculture, and supply to the fullest extent the home market, instead of growing a surplus of cotton or cattle to be sold North or East, at low prices, and the money largely expended in buying supplies that might be raised at home. The Eastern farmer has learned this lesson well. It is being taught Western corn- and wheat-growers, the South is awakening to the same truth, and the Southwest is also grasping the situation. In this diversification of industry is found what will prove a controlling factor in the future development of American agriculture.

Sink-Drainage Sawdust.—C. T. Boutelle, Middlesex Co., Mass., asks: "How can I best utilize my sink-drain waste? Would it pay to put in a vat and fill it with muck or sawdust as an absorbent?" No. There is not enough fertilizing matter in it to pay for the labor. If you have no other way of getting rid of it, then the plan you suggest is a good one. But it is a question of health rather than of economy. You want to get rid of a nuisance, and the fertilizing matter it contains will bear a portion of the expense. Probably you can find some better and cheaper method of accomplishing your object. Sawdust contains too little fertilizing matter to be worth consideration. The best use to be made of sawdust is as an absorbent in the stables.

Trailing Arbutus.—A Reader, Allendale, N. J.: It was for a long time supposed that the trailing arbutus, or Mayflower of New England, would not grow if transplanted from its wild habitat; but this, like many other old ideas, has almost passed out of mind, and you can now purchase these plants of dealers, who have them growing and well established in pots; or, if you choose, you can dig up the plants in the woods and open fields near your home and transfer them to the garden. Select small plants, and, if possible, lift them with a small ball of earth about their roots, and then plant in a half-shady position, with plenty of sand and leaf-mold about and over their roots.

Squirrel-Corn.—J. S. C., Detroit, Mich.: The little wild plant known as squirrel-corn (*Dicentra Canadensis*) may be readily introduced into any half-shady place in your garden. Mark a wild bed when the plants are in bloom, and then, later in the season or after the leaves have died down, go and dig up the small yellow tubers, which you will find in abundance a few inches below the surface. Plant these tubers wherever you desire, only being careful to place them where the ground is or will be moist in the spring. If the soil is naturally dry, cover the surface with moss or old and half-decayed leaves. We agree with you that there are few wild plants more deserving of a place in the garden than the little squirrel-corn of our northern woods.

THE NEW POTATO CONTEST.

How the Crops Were Guessed.

To ascertain the judgment of farmers as to the size of crops that it is possible to produce, prizes of a year's subscription to the AMERICAN AGRICULTURIST were offered last summer for the guesses that came nearest to the actual yields of the grand prize crops. The result was as follows, the extreme highest and lowest figures and the average being given for each section in bushels per acre:

	No. of Guesses.	Bushels per acre. Oats.	Wheat.	Potatoes.	Corn.
New England, average of all...	1,277	85	123	561	127
highest guess...	.....	241	140	1,067	350
lowest guess ...	.....	37	33	165	60
New York, average.....	703	89	55	458	105
highest.....	.....	107	80	557	130
lowest.....	.....	60	47	340	75
Pennsylvania and N. J., average	831	83	55	558	112
highest	.....	111	77	777	129
lowest.	.....	54	42	390	95
Ohio, Ind. and Ill., average....	1,509	123	64	687	145
highest....	.....	127	88	1,000	168
lowest.....	.....	65	45	300	80
Mich., Iowa, Neb., Wis., average	876	85	53	566	131
highest	.....	130	120	960	176
lowest.	.....	55	35	375	100
Southern States, average	1,366	95	55	672	163
highest.....	.....	125	75	1,000	231
lowest.....	.....	75	31	425	100
Kansas and Missouri, average..	452	97	62	672	142
highest..	.....	150	125	1,250	212
lowest...	.....	63	35	325	80
West and Pacific Coast, average	389	116	65	763	122
highest	.....	185	95	1,300	225
lowest.	.....	55	30	300	35
The Provinces, average.....	239	91	54	676	125
highest	.....	112	61	875	175
lowest.....	.....	75	42	500	61
Total, highest of all guesses....	7,645	241	140	1,300	350
lowest of all guesses....	.....	37	30	165	35
average of all.....	.....	111	65	651	152
Actual Prize Crops	.....	135	80	738	255
Nearest actual guess.....	.....	130	80	750	231

The nearest guesses were by J. W. Tyler, Cross Keys, Va., for corn; Joash Yoder, Madisonburg, Ohio, for wheat; William Peirie, Stelle City, Neb., for oats; J. F. Cass, Skagit City, Washington, for potatoes. Each of these gentlemen is presented with the prize of a year's subscription to the AMERICAN AGRICULTURIST.

The Last Call.

It is not necessary that a contestant in the potato contest for 1890 own the land upon which he grows his crop. He may rent the acre of another. An essential condition is that the area must not exceed 43,560 square feet, or one exact acre; also that the contestant must be a paid subscriber to the AMERICAN AGRICULTURIST.

The following suggestion comes from H. Stratton, Larimer Co., Col.: "I suggest that you require every competitor for the new potato prizes for 1890 to forward one dozen of the best potatoes raised, and that you place them on exhibition in New York, and finally sell them, the proceeds to be awarded to the highest competitor after awarding your prizes." Does this idea meet with general favor?

Replying to sundry inquiries, Charles B. Coy, who captured the AMERICAN AGRICULTURIST prize last year for the largest yield of potatoes on one acre, writes: "I furrowed out the prize acre with a plow, about six inches deep. I took no pains to keep the trenches from filling up, but let the earth fall in and mix with the fertilizer, so that, when the seed was dropped, the trench was from one-third to one-half filled up. This made a seed bed of thoroughly-pulverized soil."

Another good farmer, whose prize crop was depleted by the blight last summer—Dwight Bidwell, Hartford Co., Conn.—writes: "The land was a lot sloping slightly to the east, the soil loamy, and slightly gravelly. In 1888, it was heavily manured, and, in addition to some twelve cords of stable-manure, it received two tons of tobacco stems to the acre. It was planted in the ordinary way, in drills three feet apart, two eyes to a set, placed sixteen inches apart, and yielded about three hundred bushels to the acre. It was plowed March 22d and 26th, eight inches deep. April 26th and 27th it was plowed the second time, the same way as the first. April 29th and 30th, 1,500 pounds of potato fertilizer was broadcasted on the land and harrowed in with a LaDow disc harrow. The land was then marked with a Goslee marker for rows thirty-four inches apart. The drills were opened with a horse-plow, going twice in each drill. The sets (of the New Queen variety) were then placed eight inches apart in the drills, with one eye to a set. These sets were covered by hand two inches deep. Then 1,800 pounds more of the fertilizer was distributed in the drills, and the drills were filled a little, rounding with a tobacco-ridger. Some of the seed must have been chilled, and had to be replanted in June, and the blight totally destroyed them later. Thus, I practically lost nine out of forty-five rows, leaving me but four-fifths of an acre, and those injured to such an extent by the blight that I probably harvested less than half a crop. Yet from that four-fifths of an acre I had, by measure, 235 bushels."

The Rules of the Contest.

1. Each contestant must be a paid subscriber to the AMERICAN AGRICULTURIST. Those whose subscriptions are paid for only to October, 1890, or to earlier dates, may contest upon renewing their subscriptions. All subscribers whose land is in North America may compete, no matter whether they subscribe directly or through agents who are working for the liberal prizes offered in the AMERICAN AGRICULTURIST Premium List for 1890, or through other papers. New as well as old subscribers may compete.

2. Those who won prizes in the potato class of the AMERICAN AGRICULTURIST Prize Crop Competition for 1889 cannot compete in this new contest.

3. To enter the contest, subscribers have only to notify the AMERICAN AGRICULTURIST that they propose to try for the prizes. This may be done by letter or postal-card, but such notices must be given before July 1, 1890, at latest.

4. The land must be just one acre (43,560 square feet), carefully measured by a surveyor before, or within thirty days after, planting, whose affidavit (made before a justice of the peace or notary public) will be required on the certificate for the purpose provided on Page 2 of the Book for Reports.

5. The hills or rows must be at least twelve inches from the boundary line of the acre. Only one crop from one planting will be counted; no second planting between the original rows or hills will be permitted. Sweet potatoes cannot compete.

6. The AMERICAN AGRICULTURIST must be notified at least two weeks before the proposed date of the harvest, so that its representative may be present, if possible.

7. The harvesting must be done in the presence of three disinterested witnesses. They must measure the land carefully, and, if not satisfied that it is the exact and original one acre, they will have it measured by a sworn surveyor. The witnesses must supervise the weighing of the crop. Their signatures, under oath, must attest the honesty and correctness of the contestant's report, on the certificate provided for the purpose in the Book for Reports.

8. A complete record must be kept of the crop, and must be given in the blank pages provided for the purpose in the Book for Reports. This can be done by answering, in the order named, the questions asked in the printed pages. Thus, the work of making out the report will be very simple—just answer the questions.

9. These reports must be made in the Book for Reports, which, with the report so made, must reach the AMERICAN AGRICULTURIST on November 5th, 1890, at the latest, and as much earlier as possible. A copy of the Book for Reports will be furnished free upon application.

10. The first of the AMERICAN AGRICULTURIST prizes will be awarded for the largest yield of potatoes in a single crop, on one exact acre, as reported in accordance with these rules. The second prize will go to the second largest crop, and so on. The special prizes will be given in order of value for the succeeding largest crops, except when special conditions are imposed, as in the fertilizer premiums, and some premiums offered in conjunction with ours by agricultural societies. These will be awarded according to the terms specified in the offer. All such offers, and the complete list of premiums offered, will be found in the present and later issues of the AMERICAN AGRICULTURIST.

The List of Prizes.

THE AMERICAN AGRICULTURIST PRIZES.

FIRST—The AMERICAN AGRICULTURIST Grand Cash Prize for the largest yield of potatoes on one acre, in accordance with the above rules.... $200.00

SECOND—The AMERICAN AGRICULTURIST Cash Prize for the second largest yield on one acre... 150.00

THIRD—The AMERICAN AGRICULTURIST Cash Prize for the third largest yield on one acre..... 100.00

FOURTH—The AMERICAN AGRICULTURIST Cash Prize for the fourth largest yield on one acre.... 50.00

SPECIAL PRIZES.

WYOMING.—The Legislature has passed an act providing that if the AMERICAN AGRICULTURIST prizes are taken by farmers in that Territory Wyoming will give in addition (further particulars are given in the Wyoming press and by F. W. Isham, Little Bear, Wyoming)..... $1000.00

MAPES CO.—If the AMERICAN AGRICULTURIST grand cash prize for the largest yield of potatoes on one acre goes to a crop grown exclusively on Mapes Potato Manure, the Mapes Formula and Peruvian Guano Co., of 158 Front street, New York city, will give Six Hundred Dollars, making the total cash obtainable for the first prize crop under these circumstances 800.00

MAPES CO.—Provided the above premium is not taken, the Mapes Formula and Peruvian Guano Co., of 158 Front street, New York, will give $600 in gold coin for the first, second, third, and fourth largest yields of potatoes grown in this competition with the Mapes Potato Manure exclusively: First prize, $225; second prize, $175; third prize, $125; fourth prize, $75. Total..... 600.00

BOWKER FERTILIZER CO.—If the AMERICAN AGRICULTURIST grand cash prize for the largest yield of potatoes on one acre goes to a crop grown exclusively on the Stockbridge Potato Manure, the Bowker Fertilizer Co., of 43 Chatham street, Boston, will give $600, making the total cash obtainable for the first prize crop under such circumstances..... 800.00

BOWKER FERTILIZER CO.—Provided the above premium is not taken, the Bowker Fertilizer Co., of 43 Chatham street, Boston, will give $600 to the party who shall raise on Stockbridge Manure exclusively a larger crop of pototoes on a single acre than that which took the Grand Prize on Stockbridge Manure in the 1889 contest, viz., 738½ bushels..... 600.00

BOWKER FERTILIZER CO.—Provided the above premiums are not taken, the Bowker Fertilizer Co., of 43 Chatham street, Boston, will give $600 in prizes, to be divided as follows, for the largest yields of potatoes grown exclusively on Stockbridge Potato Manure, viz.: First prize, $225; second, $175; third, $125, and fourth, $75; aggregating 600.00

NEW YORK STATE AGRICULTURAL SOCIETY.—This society has appropriated $500 for special premiums for the best potato crops grown by New York State farmers in the AMERICAN AGRICULTURIST potato contest for 1890..... 500.00

VERMONT STATE AGRICULTURAL SOCIETY.—If the AMERICAN AGRICULTURIST first prize of $200 for the best acre of potatoes is taken by a Vermont farmer, the Vermont State Agricultural Society (Col. George W. Hooker, president, Brattleboro) will give, in addition to it, $300, making the total cash obtainable for the best acre of potatoes, if grown in Vermont..... 500.00

Provided the above premium is not taken, the Vermont State Agricultural Society will give $200, divided into prizes respectively, for the five largest crops grown in that State, of $100, $50, $25, $15, $10, or a total of..... 200.00

ASPINWALL POTATO-PLANTER.—If the AMERICAN AGRICULTURIST grand cash prize goes to potatoes planted by the Aspinwall Potato-Planter, the Aspinwall Mfg. Co., Three Rivers, Mich., will give, in gold coin, $210 and one Aspinwall Potato-Planter, with Fertilizer and Corn-Planter attachments all complete, listed at $90; making a total of..... 300.00

POTATO-DIGGER.—If the AMERICAN AGRICULTURIST grand prize goes to potatoes dug exclusively with one of Rigby's Patent Improved Potato-Diggers, manufactured at Houlton, Me., and Upper Stillwater, Me., by Rigby & Burleigh, price $30, they will give an additional prize of.. 200.00

JOHN A. SALZER, LaCrosse, Wis., for the largest yield of Salzer's new Gov. Rusk potato grown in the AMERICAN AGRICULTURIST potato contest, $50 in gold. Second prize, $25 worth of seed, the prize-winner making his own selection from Salzer's Northern-grown seeds. Total..... 75.00

Similar prizes on Salzer's Ironclad potato..... 75.00

C. E. ANGELL, Oshkosh, Wis., if first prize goes to a crop from his seed, will give..... 50.00

HOY POTATO-DIGGER.—For the largest yield in this competition on commercial fertilizers, any brand, the International Seed Co., Rochester, N. Y., offer a Hoy Potato-Digger, price..... 65.00

WILLIAM DEERING & CO., Chicago, Ill., offer one of their New Deering Mowers, furnishing a machine cutting either four or four and a half feet, and with cutting sections either two and a quarter or three inches, as the winner may elect.

SEEDS.—For the largest crop grown in this competition in Aroostook Co., Me., Delano Moore, Presque Isle, offers a selection from his seed catalogue for 1891, to the amount of..... 25.00

More Real Information Than From Any Other.—Out of five agricultural papers to which I subscribe, I must own that I get more real information from the AMERICAN AGRICULTURIST than any of the others, although the subscription for it is the smallest of any.

G. S. MACKAFFIE, Bathurst, New South Wales.

AMERICAN AGRICULTURIST
FOUNDED IN 1842

MAY, 1890.

Dr. George Thurber.

Dr. George Thurber, for nearly a quarter of a century editor of the AMERICAN AGRICULTURIST, died April 2d, at his home near Passaic, N. J. He was born on September 2d, 1821, at Providence, R. I., where he received his early education. After leaving school, he served an apprenticeship as apothecary, at the termination of which he began business for himself, in partnership with Joshua Chapin. During these years, he devoted himself eagerly to the study of chemistry and natural sciences in general, but especially to botany, so that at that early age he was already well known as one of the most accomplished botanists of the country. This brought him in close intimacy with Drs. John Torrey, Asa Gray, Louis Agassiz, George Engelmann, and other eminent scientists, whose warm friendship he enjoyed until their death.

In 1850, Dr. Thurber was appointed quartermaster and commissary on the United States and Mexican boundary Survey, mainly through the influence of Dr. Torrey, and with the special object to explore the flora of the hitherto unknown border regions. This task he accomplished in a most excellent manner, collecting, many times under most perilous circumstances, and bringing home with him specimens of nearly all the native species of that territory. Many of these were unknown to botanists, and several of them have since been named after their discoverer. One of the most valuable of them is *Cereus Thurberi*, which is now being extensively planted for its fruit by the governments of the desert regions of North Africa. On his return to New York, in 1853, he received an appointment at the United States assay office, of which Dr. Torrey was then the assayer. Here he remained until 1856, when, owing to his strong sympathies with General Fremont and the abolition movement, and his refusal to vote for Buchanan, he was forced to resign. The following three years he devoted mainly to the study of his botanical collections, the descriptions of which were published by the Smithsonian Institute. In 1859, he was appointed Professor of Botany and Horticulture at the Michigan State Agricultural College. This position he held for four years, and only resigned to accept the editorship of the AMERICAN AGRICULTURIST in 1863.

Creditable and meritorious as had been Dr. Thurber's previous work, his real life mission, his best and most lasting work, began here. Exceptionally well fitted for his new position by his previous training, his vast and varied knowledge of natural science, arts, and industries, his keen powers of observation, quick perception, and rare judgment as to cause and effect of events, he concentrated his whole mind and heart at once upon the work before him. How well he succeeded the millions of readers of the AMERICAN AGRICULTURIST during the past quarter of a century, scattered over the vast domains of the American continent, and far beyond the seas wherever the English language is spoken, bear living witness.

Few men, if any, have exerted so powerful and effective an influence on progressive American agriculture as has Dr. Thurber through the pages of this magazine. During his editorship, the AMERICAN AGRICULTURIST attained the proud eminence it holds as a recognized authority on everything pertaining to practical as well as scientific agriculture and horticulture, and as the leading agricultural periodical of the world. In his "Notes from the Pines" he has given the results of the many experiments constantly in progress on his farm, which he had named "The Pines," after some half a dozen stately white pines, growing on the banks of the Passaic river, directly in front of his home.

DR. GEORGE THURBER.

But in no part of his work has he taken so much real delight as in his "Doctor's Talks," and thousands of now grown-up men and women will long hold in grateful and affectionate remembrance "The Doctor," who, through his letters to the "Boys and Girls," has added so much to the charms of their childhood days. Although Dr. Thurber had no children, and was never married, he was always fond of young people, and was never happier than when he could teach and assist them in whatever was within his power. About five years ago he was afflicted with a severe attack of rheumatism, resulting in heart degeneration, from which he never entirely recovered. Since that time he lived in retirement at "The Pines," and although he contributed to every number of the AMERICAN AGRICULTURIST, up to his death, he took no active part in the editorial management.

Personally, Dr. Thurber was one of the most genial of men, with a considerable share of good-natured humor, always ready to help those whom he felt needed assistance, tolerant, liberal-minded, and generous to a fault. Those who were so fortunate as to share his personal friendship and esteem have possessed a rare privilege indeed, and have lost in him a friend whose place can never be entirely filled again.

The New Census.

Farmers, being most interested, should, for their own good, cheerfully and in a patriotic way, co-operate with all the officials, in every possible manner, to have the census returns complete and correct. "The truth, the whole truth, and nothing but the truth," is what is most wanted. Some farmers seem to think that, by keeping back the facts and figures about the amount of crops, number of live-stock, values, etc., they are doing the best thing for themselves; that by giving figures, etc., they are helping speculators and those who make corners and gamble in their products. It is a great mistake. Speculators and others of their class have their own ways, through their organizations, of getting the truth, which they keep to themselves, and then, by false reports and disguising the truth, they mislead, and coin their millions of ill-gotten gains. They are most afraid of the truth. Let farmers everywhere help in getting the true figures, for the truth never hurts an honest man.

It is the duty of every intelligent farmer to not only aid in every possible way in giving true figures, but to see and talk with his neighbor, who perhaps through ignorance hesitates to tell it all, or fears the figures given will in some manner raise his taxes or add another burden. Let it be remembered that no assessor of any kind can act as an enumerator of the census, and that every enumerator, supervisor, and employee of the census office is bound by oath not to reveal any of the official facts and figures he may obtain. The figures of an *individual* farm or farmer are never printed or made public in any manner. The facts and figures are only published when summed up into counties and States. Mr. Whitehead's article on the Eleventh Census, elsewhere printed, gives a very clear idea of the effort that is to be made to get a complete enumeration of American agriculture. The plan outlined is the most comprehensive ever attempted.

Early Merino Importations.—Mr. A. B. Allen writes: I saw, in the summer of 1811, a flock of Spanish Merinos landed from a ship just arrived in New York. They were accompanied by two shepherds and two rather large dogs. Impelled by curiosity, I followed them from the lower part of the city, through Chatham street to the Bowery. I was told they were going to a farm in Connecticut. The rams were full-wrinkled, the ewes moderately so. The wrinkles are peculiar, I believe, to Spanish sheep. Two friends of mine, in 1846, traveled on horseback through the sheep districts of Spain, in quest of stock. But they found the flocks there so inferior in size to the French and American Merinos that they did not make a single purchase. They imported French Merinos from M. Cugnot and other breeders to whom I recommended them, after they informed me of their disappointment in Spain. It was from this importation that the Vermonters obtained their first stock from which to breed.

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EXCELS IN { STRENGTH PURITY BRIGHTNESS

Always gives a bright natural color, never turns rancid. Will not color the Buttermilk. Used by thousands of the best Creameries and Dairies. Do not allow your dealer to convince you that some other kind is just as good. Tell him the BEST is what you want, and you must have Wells, Richardson & Co's IMPROVED BUTTER COLOR. For sale everywhere. Manufactory, Burlington, Vt.

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PICKET FENCE MACHINE.

No twisting of main wires, no sag to fence; pickets easily removed and replaced. Write for prices and circular to

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I took Sick,
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SCOTT'S EMULSION

RESULT:

I take My Meals,
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AND I AM VIGOROUS ENOUGH TO TAKE ANYTHING I CAN LAY MY HANDS ON; **getting fat too,** FOR Scott's Emulsion of Pure Cod Liver Oil and Hypophosphites of Lime and Soda NOT ONLY CURED MY **Incipient Consumption** BUT BUILT ME UP, AND IS NOW PUTTING

FLESH ON MY BONES

AT THE RATE OF A POUND A DAY. I TAKE IT JUST AS EASILY AS I DO MILK." SUCH TESTIMONY IS NOTHING NEW. SCOTT'S EMULSION IS DOING WONDERS DAILY. TAKE NO OTHER.

Letter from

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Mrs. Henry Ward Beecher

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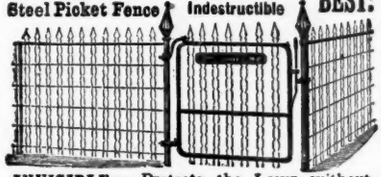

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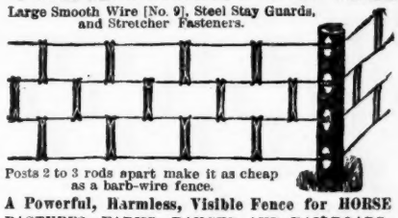
Large Smooth Wire [No. 9], Steel Stay Guards, and Stretcher Fasteners.



Posts 2 to 3 rods apart make it as cheap as a barb-wire fence.

A Powerful, Harmless, Visible Fence for HORSE PASTURES, FARMS, RANGES AND RAILROADS.

You can build any height, and, by using Hog or Sheep Guards, as close as you wish.

If not for sale in your town, write to

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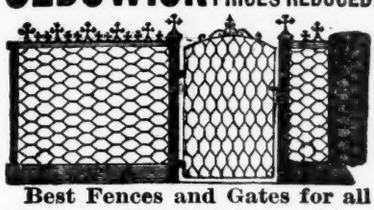

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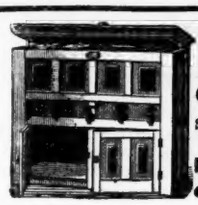

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INDUSTRIAL NOTES.

Alfalfa or Lucern.—Dr. John Leeson, Cadillac, Mich.: On light, sandy soil, as described, alfalfa is well worth trying. Sow as you do clover, at the rate of ten pounds per acre.

Land Measurement.—"D.," Savannah, Ga.: A tract of land containing ten acres—being two acres wide and five long—would measure 1,044 feet five inches in length and 616 feet ten inches in width.

An Old Trick as a New Humbug.—One of the efforts made to humbug farmers is to apply a high-sounding name to some common article. Thus, ground limestone is sold by a Vermont "Chemical Fertilizer Company," as "Hall's Coral Fertilizer."

Bermuda Grass.—Subscriber, Wheatley, Arkansas: To clear out Bermuda grass from an old field, and keep it out, requires very thorough work. Summer fallowing, to be effectual, must be accompanied by working with a fine-tooth harrow, and the burning of all the grass brought to the surface. A single root or joint left on good, moist land will multiply rapidly and spread the grass.

Flax Culture.—M. B. Curtis, Yakima Co., Washington: Where flax is raised for the seed alone, it is usual to sow two to three pecks per acre, according to the condition of the soil. The land and seed should be very clean, as the flax makes a slender growth at first and is unable to hold its own against weeds. Ten to fifteen bushels per acre are about the average crop, though twice that is not unknown on good, rich soil with good culture and favorable season.

Relieving Choked Animals.—Elisha Bassett, Franklin Co., Mass., writes: I had a steer which became choked, and I employed an expert to relieve it, which he did by punching the obstruction down the animal's throat. I had to take its hide off the next morning. I have since saved several choked cattle by putting a handful of gunpowder on the roots of the tongue, and then holding the jaws together. It relaxes the muscles and relieves the animal in half an hour. I have had three cases cured in this way.

Save the Manure.—M. E. Swan, Dawson Co., Nebraska, writes: If manure is allowed to lie in the barn-yard and wash away in rain and melting snow, the best part leaches out. To avoid this, scoop out the middle of the yard, and place the excavated earth around the outside, leaving it like a saucer. This will catch and retain all the drainage, with the additional advantage of checking excessive fermentation and fire-fanging. A shed over the manure-heap is an advantage, but many farmers think they cannot afford it.

Sorghum in Alabama.—John W. Goodwin, Jefferson Co., Alabama, writes us: Farmers in this State are learning that it pays to raise their own sweetening, and that the Early Orange cane is the best variety for the purpose. It makes a sirup equal in appearance to the finest sugar drip, and has the advantage of known purity. It finds ready sale in the market at seventy-five cents per gallon, while common sorghum is a drug at forty cents. It matures very early, and in this latitude need not be planted so soon as other varieties to be out of the way of early autumn frosts.

Farm Fences.—Jasper Blines, Clark Co., Missouri, writes: The fence of wire and pickets has not proven to be all that was hoped for it. It costs as much as a board fence, and is liable to blow down or break loose from the posts. For general purposes a fence of at least four strands of barb-wire, with posts eight feet apart, seems to be the best we have yet. For permanent fence the Osage-orange hedge is the most economical. After it is well grown it costs nothing for maintenance but the labor of trimming. It adds greatly to the beauty of the farm, and does not injure and lacerate cattle and horses as does barb-wire.

Corn Smut.—Walter A. Lynn, Iowa, writes: Careful observations lead me to the conclusion that only a little over one-third of the corn-plants infested by smut are barren. A field which had not been in corn for six years was found as badly infested as those which have been devoted to corn without any effort at picking off the smut. This would show clearly that clearing off and destroying the smut bunches affords no security against the propagation of the fungus, unless it is persisted in by all in a large area, as the spores may lie for years in the soil, or be wafted by the winds from distant fields.

Southern Interstate Immigration Bureau.—A movement full of promise for the Southern States was initiated at the convention in Montgomery, Ala., in December, 1888, and now fully organized. It is a "combine" of representatives from every Southern State, for the laudable purpose of setting forth and advertising the advantages offered in the soil, climate, and other features of the Southland. It is proposed to hold, in 1891, an exhibition in some Northern city, of the products of Southern industry. Such an exhibition can not fail to be replete with interest to all who see it, and of immense advantage to the exhibitors. The proposition has received enthusiastic approval of leading men of all shades of political and economical opinion, both North and South. Col. John T. Patrick, Raleigh, N. C., commissioner of organization, will cheerfully furnish all desired information.

Disastrous Frosts in the South.—Reports of the severe March frosts have reached us from many points. The following from Rev. Lyman Phelps, Sanford, Fla., gives an especially clear statement of the extent of the disaster "We have suffered the most severely of any cold since I have been in the State (fifteen years). Trees in the most prolific bloom I ever saw, with young oranges set have not a green leaf left, and I fear many trees are killed below the buds. Many of my crosses of the last three years, which were in bloom for the first time, are gone. I see you recommend the planting of sweet peas early. The frost did not leave a vestige of some I had up about six inches high, of my garden peas either. Corn once worked is all killed, root and leaf. The damage to the trees was all near the ground. Even the bloom on the top of the large trees was not injured. The maple trees in full leaf, and the mulberries in full fruit, all shared the same fate. The persimmon grafts had started and those too were killed. My guavas too are all gone. Some oranges from South America and from Mexico are killed below the buds. I had lemons frozen on the trees, solid enough to break the rind, in the low portion of my grove, and yet 300 feet away not a leaf was touched. By actual tests in the morning, at sunrise, the mercury was ten degrees lower at the place where the damage was done than where the leaves were not touched.

A Few Simple Dog Remedies.—Simple remedies are the most efficient in ordinary ailments. From different causes, the skin of a dog becomes harsh, becomes scaly, and cracks, causing much discomfort and unsightliness. For such troubles, have within easy reach a simple salve made by mixing equal parts of flowers of sulphur and lard free from salt. The lard is first melted, and the powdered sulphur well stirred in, when the mass is removed from the fire, and constantly stirred until cold, to thoroughly incorporate the sulphur. This salve well rubbed in every day for three days, when the trouble first appears, will usually prove efficacious. To get rid of fleas, which are a troublesome nuisance, use snuff. It is much better than the soaps made for the purpose. Spread an old sheet on the ground, place the dog on it, and then carefully dust or rub in the snuff, little by little, on every part of the body. Soon the fleas drop off, curl up, and die. One application, if done thoroughly, will do the work sufficiently for several weeks. For very young pups, this application may be too severe, as it gets in the eyes and mouth. For such youngsters, we use good Persian insect powder, well rubbed in. When the young puppies are troubled with worms, mix a tablespoonful of gunpowder in a pint of milk. This generally clears out the worms without in any way impairing the general health of the animals.

The Lessons of the Potato Contest.—Writing of his great test in the AMERICAN AGRICULTURIST potato competition last year, some of the details of which were published in our February number, John M. Smith, President of the Wisconsin Horticultural Society, says in the *Farmers' Review:* "Five years ago last spring I purchased a large part of the land upon which this crop of potatoes was grown. It was new land, and covered with stumps and brush. We dug out both stumps and brush so completely that one good team of horses plowed the entire piece without once striking a root or stump that held them up. We planted the piece with potatoes. The season was a fair one, but we harvested less than 100 bushels of merchantable potatoes per acre. Five years later we harvested over 400 bushels per acre of much better ones. There are millions of acres of land in these Northwestern States that are capable of growing just as large crops as here reported. They will not do it next season, because the soil is not at present sufficiently fertilized, neither is it in first-rate condition; but, my friends, you can begin to put it in better condition next season, and keep on improving it year after year until it will yield as large crops as have been reported either here or elsewhere. In short, to me it is only a repetition of the old, old story. Moderate and indifferent crops do not pay, and can not be made to pay. They have not paid for a number of years past, and I can see no prospect of their paying any better in the years to come. Very large crops have paid in the past. They will pay yet. They promise to pay in the future. Then let us all, instead of constantly trying to increase our number of acres, increase the yields per acre; and, by so doing, I firmly believe we shall make more money, have more comfortable homes, and be of more service both to our neighbors and to our country."

Personnel of the Census.—The Superintendent of the Census is Robert P. Porter, and Agriculture is Division 12, divided into Subdivisions A and B. Subdivision A is in charge of John Hyde, of Nebraska, and includes cereals, cotton, tobacco, rice, hops, and other special crops, irrigation, and forestry, the number, area, and value of farms, and of farm labor. He will have several special agents to investigate and report upon these different subjects. Mr. Hyde first made his mark by investigating contagious diseases of cattle in Europe, and was one of the earliest advocates of the now generally accepted germ theory. He served an apprenticeship in agricultural journalism on the *Prairie Farmer*, and next made a tour of every part of North America, including Alaska and the British possessions. He has since made the agricultural and other capabilities of the newer States and Territories a subject of special and minute investigation. Subdivision B is in charge of Mortimer Whitehead, of New Jersey, and includes horses, cattle, sheep and wool, swine, dairy, poultry, bees, orchards, nurseries, market gardens, small fruits, forests, tropic and semi-tropic fruits, etc. Mr. Whitehead is a farmer, having bought his present farm near Middlebush, Somerset county, N. J., in 1865, upon his return from the war, in which he served in the Sixth Army Corps (General Sedgwick), under McClellan, Burnside, and Hooker. Mr. Whitehead subsoiled and tile-drained his farm, planted one of the largest orchards in the State, and acres of small fruits. He keeps a choice herd of Jersey cattle and other good stock. He has been a supporter of and writer for the agricultural press since boyhood, was one of those who called the first meeting of the New Jersey State Horticultural Society, was a charter member of the first grange in the State and afterward Master of the State Grange, and is now serving his fourth term of two years each as lecturer of the National Grange. He has visited nearly every State in the Union, and is still managing his farm. In Subdivision B, Col. H. Gardner has been appointed special agent to investigate viticulture, and J. H. Hale, of Connecticut, special agent on nurseries, fruits, seed and truck farms, and tropic and semi-tropic fruits. Mr. Hale is a self-made Connecticut Yankee farmer, and has had a large and successful experience as a fruit-grower and nurseryman. His firm of Hale Brothers discovered and introduced a number of what are now the leading strawberries and raspberries, and still has eighty acres in small fruits and peaches. He has fifty acres of peach orchards that are from eight to twelve years old, proving that with the right care this crop can be grown in cold New England. Mr. Hale was horticultural editor of the Hartford *Courant* for four years, master of the Connecticut State Grange, member of the Board of Agriculture, and trustee of the Storrs Agricultural School. He has had no other interests but agriculture, and has made a practical success of the business.

Clean and Full.—Thanking you for furnishing a paper so clean and full, I can give it to my men without hesitation. JNO. R. WHITNEY, Philadelphia Co., Pa.

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Read and Decide for Yourself.

"Dr. Haas' Hog Remedy is a certain preventive of Disease, making pigs thrive well and gain flesh fast."
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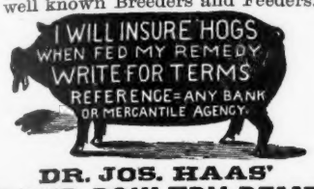
"Pigs fed with Haas' Remedy I consider cholera proof." JOHN HORTON, Unadilla, Neb.

"Would not be without it."
HENRY FOSTER, M. D., Prop. "Sanitarium," Clifton Springs, N. Y.

And hundreds of similar testimonials from well known Breeders and Feeders.



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USED SUCCESSFULLY 14 YEARS.

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PRICES: 25 lb. cans, $12.50; $2.50, $1.25 and 50c. a package. Largest are cheapest.
Orders by mail receive prompt attention.
Write for circular. Send 2 ct. stamp for "Hogology," a 64 page pamphlet on swine. Mention this paper. **JOS. HAAS, V.S., INDIANAPOLIS, IND**

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For RESIDENCES, CHURCHES, CEMETERIES, FARMS GARDENS Gates, Arbors, Window Guards, Trellises, Fire-proof PLASTERING LATH, DOOR MATS, &c. Write for Illustrated Catalogue; mailed free

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Over 350,000 Acres of Choice Farm

Lands in rich agricultural region. Failure of crops never known. Best all-the-year climate in the world. Soil adapted to all kinds of farming. Plenty of water. Church, school and social advantages. For sale at very low prices, and on unusually liberal terms.

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PAINLESS EFFECTUAL

BEECHAM'S PILLS

THE GREAT ENGLISH MEDICINE — WORTH A GUINEA A BOX

For Weak Stomach—Impaired Digestion—Disordered Liver.

SOLD BY ALL DRUGGISTS.

PRICE 25 CENTS PER BOX.

Prepared only by THOS. BEECHAM, St. Helens, Lancashire, England.

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FOR UNITED STATES, 365 & 367 CANAL ST., NEW YORK,
Who (if your druggist does not keep them) will mail Beecham's Pills on receipt of price—*but inquire first.* (Please mention this paper.)

"NEVER-BREAK"

steel cooking utensils won't warp, scale, crack, absorb grease, or taste of previous cooking. Every housekeeper appreciates these qualities—then just think you *can't* break them. What a comfort to have such things. If your dealer hasn't them send for our illustrated circular.

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Sulky and Walking Plows and Harrows of every description. A special bargain to one person at each post-office to introduce them. Send 10c for information.
Union Machine Co.,
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PHILADELPHIA, PA.

A VEGETABLE WONDER!

HENDERSON'S NEW

BUSH LIMA BEAN.

Just fancy a Lima Bean growing only 18 inches high! Yet this is exactly what we offer in HENDERSON'S NEW BUSH LIMA. Every one knows that the old Lima can only be grown on poles, so that those who plant the **BUSH LIMA** will not only enjoy the same delicious flavored beans, but by dispensing with poles save an unsightly expense. Our **NEW BUSH LIMA** is not only as productive (single plants have borne as high as 294 pods) but it is also **TWO WEEKS EARLIER** than any of the Pole Lima Beans. Planted at corn-planting time, it is ready for the table (around New York) in July, and bears in the greatest abundance until frost.

Price (by mail) 25 cents per packet, 5 packets for **$1.00**, *12 packets for* **$2.00** (*12 packets sufficient for an ordinary sized family for the season*). *Directions for growing on each packet.*

☞ With every order for a single packet or more, will be sent, gratis, our superb catalogue of *"Everything for the Garden"* (the price of which is 25 cents), on condition that you will say in what paper you saw this advertisement. Club orders for FIVE or TWELVE packets can have the Catalogue sent, when desired, to the separate address of each member comprising the club, provided always that the paper is named. ☜

PETER HENDERSON & Co.
35 & 37 Cortlandt St., New York.

FOR ONLY 10 CENTS We will send the MAYFLOWER, 4 months on TRIAL, and a Packet of Mixed Flower Seeds containing 50 of the newest and rarest kinds. Sown this Spring they will give you all Summer a bed of rare flowers such as you never dreamed of. **THE MAYFLOWER** is a 12-page illustrated monthly journal devoted entirely to flowers and gardening in all its branches. It is the finest publication of the kind in the country. Edited by JOHN LEWIS CHILDS assisted by MR. A. BLANC and C. L. ALLEN, and a score of other well-known writers and cultivators. REGULAR SUBSCRIPTION PRICE 50 cents per year. This offer to send it four months and the packet of rare new seeds is made expressly to get every lover of flowers in the land to become acquainted with the merits of our paper. It is so good they will always want it. **FOR ONLY 10 CENTS** ☞ GET 4 OF YOUR FRIENDS TO ACCEPT THIS OFFER WITH YOU AND WE WILL **SEND YOU THE WONDROUS WEATHER PLANT FREE.** Get 19 to send with you and we will send you postpaid 5 of the most beautiful and rare plants you ever saw, such as will astonish you with their beauty. Send at once. This offer will not appear again.

Address **THE MAYFLOWER, FLORAL PARK, N. Y.**

EARLY MASTODON CORN.

The Greatest Yellow Dent Field Corn in America.

First offered in our 1889 catalogue, but already planted by more than ten thousand of the most progressive farmers in the country. Last year, Alfred Rose, of Yates Co., N. Y., raised from our seed 191 bushels of Early Mastodon on one acre; Geo. Gartner, of Pawnee Co., Neb., succeeded in raising 151 bushels of Mastodon on one acre. (See page 123 of the March AMERICAN AGRICULTURIST, also page 227, April issue.)

Prices on Early Mastodon for 1890: *Packet* 10 *cents; pound* 50 *cents; 3 pounds* $1 *by mail postpaid. By express or freight, purchaser to pay freight, peck* $1; *bushel* $2.50; *two bushels* $4; 10 *bushels* $18.75. No charge for bags. To secure the genuine, buy your seed direct from the introducer and headquarters. Remit by P. O. money or express order, bank draft or registered letter, addressing all orders to

WM. HENRY MAULE, 1711 FILBERT STREET, PHILADELPHIA, PA.

ESTABLISHED 1838 — DREER'S SEEDS — FRESH RELIABLE

DREER'S SEEDS, PLANTS, BULBS & REQUISITES.

Have been sown, planted and used by many successful cultivators for **over Half a Century.** Our liberal treatment of all in the past is sufficient assurance for the future. *We avoid sensational and impossible novelties*, so the beginner as well as the experienced grower may **rely** on descriptions of varieties and prices offered in **DREER'S GARDEN CALENDAR**—**NOW READY.** This is a beautifully illustrated work on Gardening, and should be in the hands of every one who has a garden. Mailed on receipt of 6 cts. for postage. **HENRY A DREER, 714 Chestnut St., Philadelphia.**

NEW STRAWBERRY "LADY RUSK"

The best berry for long distance shipments. Will not rot or melt down if packed dry. Headquarters for all leading varieties of Berry Plants and **GRAPE VINES** having 300 acres in cultivation. **Catalogue free.**
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ARE THE BEST.
NORTH, SOUTH, EAST OR WEST.
The Oldest and most extensive Seed Growers in the United States. FOUNDED 1784.
Implements and Seeds in Great Variety. Send for Handsomely Illustrated Catalogue and Price List.

D. LANDRETH & SONS,

21 and 23 South Sixth street, Philadelphia, Pa.

PANSY PLANTS 12 very choice Pansy Plants, all colors, 20c., or 24 for 30c., nicely packed, post paid. Catalogue free. F. B. MILLS, Thorn Hill, N. Y.

FRUIT AND SHADE TREES, Berry Plants. Grape Vines, Gladiolus Bulbs, Geraniums, etc. Price list free. S. C. DeCou, Moorestown, Burlington Co., N. J.

FREE TO ALL.

Send your address immediately, on postal card, for our 80-page elegantly Illustrated Catalogue, describing more than 300 of our Works pertaining to Rural Life.

ORANGE JUDD CO., 751 Broadway, N. Y.

STRAWBERRY HULLER. By mail, 10 cents each; 3 for 25 cents.
A. S. BUNKER, Lawrence, Mass.

A CHANCE TO MAKE MONEY.
Salary and Expenses paid, or Commission if preferred. Salesmen wanted everywhere. No experience needed. Address, stating age,
H. W. Foster & Co., Nurserymen, Box M, Geneva, N.Y.

SWEET POTATO PLANTS. **3,000,000. All the leading kinds.** Packed to go any distance, by mail or express. Write for Circular. Address
W. W. Rathbone,
Marietta, O.

JAPANESE BUCKWHEAT—Selected from crops producing 35 to 50 bu. per acre past season. $1 per bu.
S. DEAN, Oak Hill, New York.

Choice Flower Seeds.

Grown and sold by MILTON E. FISK, Lunenburg, Mass. Send for catalogue and receive a sample packet free.

ENSILAGE All of our last year's patrons indorse it and report most satisfactory results. Their letters printed in pamphlet, also valuable Treatise on Ensilage and Plan for Silo, together with Catalogue of Cutting Machinery and Powers, mailed free.
SILVER & DEMING MAN'F'G CO., SALEM, OHIO.

1838. 1890.
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WONDERFUL PEACH.
Lawson, Kieffer, LeConte and Idaho. Japan and NATIVE Plums. Apples, Cherries, Peaches and **Nut-bearing Trees,** Strawberries, Raspberries, Blackberries and **Grapes** in large supply. All the worthy old and promising new fruits.
Catalogue *free.* **WM. PARRY, Parry, N. J.**

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Choice selected Houlton. Aroostook County, Maine, Early Rose, Beauty of Hebron and all other well known varieties. For sale by

W. E. DURYEA'S SONS,
Produce Commission Merchants, 119 Warren St., N. Y.

AGENTS WANTED
Send for Circular and price list

BREED'S UNIVERSAL WEEDER AND CULTIVATOR
T. B. TERRY, of Ohio, says: "It cultivated two rows at once; hoed them perfectly, going over seven acres in five hours."
UNIVERSAL WEEDER CO.
North Weare, N. H.

POEMS BY WHITTIER, LONGFELLOW & TENNYSON. Illustrated. 3 volumes for only 10c.
F. W. BENTON, Publishers, St. Louis, Mo.

"MERCHANDISE MEMORANDUM." This book is easily kept, and in a compact form giving you the following at a glance:

The date of every invoice or bill; The rate and date of discount expiring; The day same are due; The amount of invoice; The total amount bought or sold; The day it is paid; The amount of discounts and deductions; The net cost of merchandise; The net amount received for Merchandise.

They are made of fine quality of paper and are well bound, containing 250 pages. Will be sent post-paid on receipt of price, $2.50. **MARK C. FARR, 30 West Randolph St., Chicago, Ills.**

BEECHAM'S PILLS cure bilious and nervous ills

Coming Publications.

THE NEW AMERICAN BOTANIST AND FLORIST: Lessons in the Structure, Life, and Growth of Plants, together with a simple analytical flora, descriptive of the native and cultivated plants growing in the Atlantic Division of the American Union. By Alphonso Wood, A. M., Ph. D.; revised and edited by Oliver R. Willis, A. M., Ph. D. New York: A. S. Barnes & Co.

Those familiar with Dr. Wood's "Lessons in the Structure and Growth of Plants," as written some twenty years ago, will find in this attractive volume of over 600 pages considerably more than what is usually indicated by a "revised edition." In fact, the principal part of the work is practically new, all that pertains to structural and physiological botany having been almost entirely rewritten. Dr. O. R. Willis, the editor, has succeeded admirably in embodying in the work all the most important recent discoveries in botanical science, without materially enlarging the bulk of the volume. Many new and excellent illustrations have been added wherever they could aid the student in obtaining a clearer understanding of the lessons to be conveyed. This great aim of the editor to simplify and facilitate the study of botany, without sacrificing thoroughness, is apparent on every page. He has admirably succeeded in reducing the great bugbear to beginners—the crushing weight of scientific terms—to a minimum. There is a peculiar attraction in the style and arrangement of this work, which makes its study as fascinating as the reading of a good novel. The introduction of this work into colleges and high-schools cannot but exert a powerful incentive to the study of botany. Sold by the Orange Judd Co.; price $1.75.

LAKE CHAMPLAIN AND ITS SHORES. By W. H. H. Murray. Boston: De Wolfe, Fisk & Co.

Lake Champlain is a liquid gem, set in some of the most striking and beautiful scenery on the continent. Aside from its picturesque beauty and salubrious air, the region is replete with historic interest. The lake was the watery pathway of fleets and armies from the time of the first settlement of the St. Lawrence and Hudson valleys. Its surface and shores were the scenes of many sanguinary and decisive battles. Yet this region has never been recognized as a part of the great "summer region" of the country until within very recent years. The gifted and somewhat erratic preacher-author has given the public, in this unpretentious work, more than a passing glimpse of the Lake Champlain region, its beauties and its history. It is delightful as a summer book, and valuable as a guide to one of the most attractive historic regions of our continent. Sold by the Orange Judd Co. Price $1.

THE CIDER-MAKER'S HAND-BOOK. By J. M. Trowbridge. In press of the Orange Judd Co.

The art of cider-making has advanced from the crude, and nearly always unclean, practices of former generations to a place among the skilled industries. Improved mechanical appliances and scientific research have wrought a revolution in the methods, and greatly enhanced the quality of the products. The modern methods and the scientific facts upon which they are based have hitherto been the trade secrets of a select few. The work under notice, which is now in press, gives a very clear and lucid exposition of them all. Everything relating to cider- and wine-making is fully treated from the most advanced stand-point. The author is an experienced cider-maker, and combines thorough scientific knowledge with practical skill. The work will be handsomely illustrated, and its publication will be welcomed by all who are interested in the treatment of cider or wine.

MERE MENTION.

How to Preserve Health. By Louis Barkan, M. D. A small hand-book, filled with common-sense hints on hygienic living, and directions what to do in cases of accidents and emergencies.

American Shropshire Sheep Record.—The fifth volume of this publication, recently issued, makes a handsome octavo of 646 pages. It carries the record from No. 7,214 to No. 13,497 inclusive, making 6,283 animals. A list is given of nearly 2,800 breeders, owners, and importers of the animals recorded. The volume is very creditable to the skill and accuracy of Mr. Mortimer Levering, La Fayette, Indiana, the editor and compiler.

Taken it For Twenty Years.—I have been taking the AMERICAN AGRICULTURIST for the last twenty years. F. J. SCHOOCH, Snyder Co., Penn.

IMPORTANT.

The following article is taken from the *Cultivator and Country Gentleman*, of April 10, and every farmer should read it through:—

"A point often overlooked, if not entirely lost sight of by many in the purchase of commercial fertilizers, is that of solubility. The laws demand that the chemical contents of every fertilizer shall be stated; that is, so much ammonia, so much phosphoric acid, and so much potash. But they do not require, nor have the official chemists been able to determine, the sources from which these ingredients are obtained. One fertilizer may contain its ammonia entirely in the form of wool, leather, horn or hoof wasts—all inferior if not worthless sources. Another may contain the same *amount* in the most soluble chemicals, such as sulphate of ammonia, nitrate of soda, or properly dissolved organic materials, such as dried blood, meat, bone and fish—all of them excellent materials for the growth of crops; and yet in the chemists' reports these two fertilizers, if they contain the same *amount* of ammonia, will stand precisely on a level with each other, with no official indication as to which is the more valuable.

It is a fact well known in the trade that many fertilizer manufacturers are using doubtful ammoniates, having been led into the practice, in some cases no doubt by the fact that the station valuations would give their goods as high a rating, without reference to the source of the fertilizing ingredients. Some well known fertilizers have been so loaded with this inferior material as to secure station valuations in many cases far in excess of the selling price, and no doubt many farmers have been misled into buying them by these high ratings, and it thus has happened that a system devised to assist the farmer has been the means, in not a few instances, of his deception.

The Maine and Vermont Experiment Stations, however, last year took the initiative in making special tests to show the availability of the nitrogen in the different fertilizers sold in their respective States. The results obtained certainly demonstrated the wisdom of their course, for on a scale of 100 several well-known brands showed less than 50 per cent of their organic nitrogen to be available, while some went as low as 22 per cent. Prof. W. H. Jordan, Director of the Maine Experiment Station, said, in making this report:

"A solubility of less than 40 per cent gives good ground for suspecting the use of an inferior ammoniate. In fact, anything less than 50 per cent is to be regarded as indicating the presence of organic material of a lower grade than dried blood, dried flesh or dried fish."

This point of solubility in fertilizers is one of the most vitally important that a farmer has to deal with. In applying commercial fertilizers, he looks for immediate effect; and it seems hardly necessary to say that such results will not follow unless the fertilizer be soluble—that is, in a condition so that almost as soon as it is applied it can be taken up as acceptable plant food by the growing crop. It is interesting to note in this connection that the Stockbridge Special Manures, which have been so extensively advertised in our columns, stood ahead of all other fertilizers tested in this way, the Stockbridge Grass Manure standing 91.7 on a scale of 100, while the other brands manufactured by the Bowker Fertilizer Company stood well up in the list, leading most, if not all, their competitors. Surely, with this record, and the fact that the grand prize crop of potatoes last year was raised on the Stockbridge Potato Manure alone, those farmers who enter the 1890 contest may do so with the assurance that they can use no fertilizer better adapted to the purpose than the Stockbridge Special Manure."

☞ Send for pamphlets and conditions for new Potato Contest for 1890.

BOWKER FERTILIZER CO., BOSTON & NEW YORK.

JOSEPH GILLOTT'S STEEL PENS.

GOLD MEDAL, PARIS EXPOSITION, 1889.

THE MOST PERFECT OF PENS.

GRIND YOUR OWN Bone, Meal, Oyster Shells, Graham Flour & Corn, in the **$5 HAND MILL** (F. Wilson's Patent). 100 per cent. more made in keeping Poultry. Also **POWER MILLS** and **FARM FEED MILLS.** Circulars and testimonials sent on application. **WILSON BROS.** Easton, Pa.

25 CTS. FOR $1.50 WORTH. INK-PAD J.ASTOR

Your own name in beautiful type on self-inking Pocket Stamp, in neat metal case, highly nickel-plated (regular price, 75 cts.). 1 elegant *Guinea Gold Badge*, about four times the size shown here, handsomely engraved with any initial desired (regular price, 75 cts.). 100 popular songs and 16 complete stories by the most famous writers. To introduce will send the entire lot in neat box for 25 cts. Clubs of five, $1. Satisfaction guaranteed or money refunded. Mention paper. Address, NASSAU STAMP AND NOVELTY WORKS, 58 & 60 Fulton St., New York.

BEES AND HONEY.

Send to the Largest Bee-Hive Factory in the world for sample copy of **CLEANINGS IN BEE CULTURE** (a $1 illust'd semi-monthly), and a 44 pp illus. Catalogue of **BEE KEEPERS' SUPPLIES.** Our **A B C of Bee Culture** is a cyclopedia of 400 pp. and 300 cuts. Price $1.25

Mention this paper. **A. I. ROOT, Medina, O.**

THUNDER AND LIGHTNING

A storm is coming. Buy Oborn's Hay Carriers and save your hay. Thousands in use. We make the latest and best improved Hay Tools. Save time. Save money by sending for CATALOGUE.

Agents Wanted. **OBORN BROS., Marion, O., Box B.**

AGENTS LOOK HERE

and farmers with no experience make **$2.50 an hour** during spare time. J. V. Kenyon, Glens Falls, N. Y., made **$18 one day, $76.50 one week.** So can you. **Proofs and catalogue free.**

J. E. SHEPARD & CO., Cincinnati, O.

MATTERS OF BUSINESS.

Condition of Crops and Stock.

The condition of winter wheat on the first of April, as reported by the statistician of the United States Department of Agriculture, averages eighty-one for the entire breadth. The general average for rye is 92.8. Seeding was late in the States of the central valleys, because of drought, and the soil was therefore not in the best condition; but the mild winter continued growth until the plants were too luxuriant to withstand the usual vicissitudes of March. Recent frosts have cut down the growing plants quite generally, and in wet or submerged areas the roots have been destroyed. There are reports of recuperation by sprouting and renewed growth in this region. Where the roots are intact, great improvement will follow, with good weather. The fact that the roots are so well developed is favorable to improvement. In the South the soil was generally in better condition, and the early sown developed rapidly, and in December and January suffered more or less from attacks of the Hessian fly. In March, frosts were very general, discoloring and sometimes killing the plants down to the ground, but not injuring the roots, except in wet places. The crop looks brown in New York, but the State agent believes it is better than it looks. The other Middle States return wheat in good condition. The Pacific Coast has had an extraordinary amount of rain and snow, which have delayed seeding and injured the early-sown areas. The averages of condition of principal States are as follows: New York, 88; Pennsylvania, 99; Ohio, 87; Michigan, 67; Indiana, 75; Illinois, 75; Missouri, 83; Kansas, 87; California, 71.

The report of condition of farm animals makes the averages as follows: Horses, 97.4; cattle, 94.1; sheep, 93.7; swine, 95.6. The percentage of losses of farm animals, by disease, winter exposure, or otherwise, as estimated, average 1.64 for horses, 3.64 for cattle, 7.3 for sheep, and 7.6 for swine. The losses from winter exposure of cattle have been very heavy in the northern Rocky Mountain belt and on the Pacific Coast. While it is difficult to get information from the ranches it is certain that Montana, Idaho, Washington, Oregon, and California have lost heavily in both herds and flocks by the severities and deep snows of a winter which has been one of remarkable mildness east of the Mountains. The reports indicate the loss by exposure, throughout the country, of more than a million cattle, and still larger losses of sheep.

There is Money in Them.

The Star.—Read the advertisement of The Star Manufacturing Company in another column. Write them for full particulars about their Seeder.

Perfectly Harmless.—Thatcher's Orange Butter Color, the largest packages for the price, the purest, strongest, and the most natural June tint of any known preparation in the world. It is made by the

THATCHER MFG. CO., Potsdam, N. Y.

A Salary, with expenses paid, will come handy to any one who is now out of employment; especially where no previous experience is required to get the positon. If you want a position, see advertisement on page 288, "A Chance to Make Money."

Champion Field Corn.—The J. D. Stewart Seed Co., of Springfield, Ohio, control the stock of Stewart's Clark County Champion 90-day white field corn. It is claimed to produce 125 bushels per acre on good land, and to yield better crops on thin soil than other varieties.

Change of Name.—The O. S. Kelly Co., of Springfield, Ohio, is the new name for The Springfield Engine and Thresher Co., the change in name being made to more fully cover the large line of goods that this prosperous company are now making. At the same time they have increased their capital stock from $250,000 to $350,000.

An Adjustable Mower. — One of the peculiar features of the Hopkins automatic mower is, that it can be adjusted to cut a swath of seven feet, six feet, five feet, or four feet eight inches, by merely changing the knife, which can be done in ten minutes, in the field. This machine is made by the Automatic Mower and Manufacturing Co., Chicago.

Fearless. — The Empire Agricultural Works, Cobleskill, N. Y., have been operated for over thirty years under the same management. The Fearless threshing-machines, tread-power machines of the best patterns and construction, and other agricultural machinery are built. Here are also the Eastern headquarters for the well-known Smalley ensilage-cutters. The veteran proprietor, Mr. Minard Harder, has achieved a name which is, in itself, a guarantee of the highest excellence.

The Monitor. — Good material, good workmanship, light draft, and the simplest principle combine to make the Monitor Pulverizer what it is. It reduces cloddy, hard-baked, and crusty land to the finest condition by once going over, being at once harrow, clod-crusher, and pulverizer. It is made by the Monitor Manufacturing Co., 134 Van Buren street, Chicago, Ill.

The Best Springs. — They are not sulphur springs, of any color, to which we refer, but the unrivalled tug springs, made by the Low & Rewell Manufacturing Co. The springs are used on any kind of vehicle, contributing greatly to the comfort of driver and horse. They are as durable as any whiffletree, and have stood the severest tests under all circumstances.

The Eclipse Bar.—The Eclipse Post-hole Digger and Eclipse Post-hole Bar are now manufactured by the Springfield Implement Co., of Springfield, O. This Digger has long been known as a great labor-saving machine. The Eclipse Bar is something entirely new, and, working on the same principle as the Eclipse Digger, is particularly adapted to farmers, grape-growers, and others who have posts to set.

A Jamaica Exhibition.—An international exhibition is to be held in the island of Jamaica, in January, 1891, under the auspices of the colonial government. No charge is to be made for space in the exhibition buildings, nor will duties be levied on any of the exhibits, unless sold on the island. Mr. Thomas Amor, 280 Broadway, New York, secretary of the committee for the United States, will furnish any desired information.

Steel Roofing.—The steel roofing made by the Canton Steel Roofing Co., of Canton, Ohio, is light, durable, fire-proof, and, in the end, very cheap. Roofs made of this material can not break, become loose, or get out of order, and, if painted every three to five years, will last a century. The same company has recently obtained patents and set up machinery for making long eaves-trough, conductors, boots, shoes, and angles, wire and steel hangers, strainers, etc.

Portable Creamery.—The old-fashioned "milk-house" of our fathers has, on every well-conducted dairy-farm, given place to the portable creamery—compact, cleanly, and efficient. Among the various patterns in market, Moseley's Occident Creamery holds a very high place. Every dairy-farmer who supplies cream to a local factory, or makes butter on the farm, will do well to address the Moseley & Pritchard Manufacturing Co., Clinton, Iowa, for circulars and introductory offer, which includes freight paid by the manufacturer.

Prize Spraying.—A prize of $72 is offered by Mr. P. C. Lewis, of Catskill, N. Y., for the person who can show the best results from spraying their trees the coming season with insecticides by using the Lewis Combination Force-Pump, manufactured by him. He offers to furnish for $5.50, express charges paid, a complete spraying outfit, with a valuable illustrated book on "Our Insect Foes, and How to Destroy Them." The Lewis Combination Force-Pump is made of brass, and is recommended by leading entomologists and horticulturists.

Early Mastodon Corn.—Two of the prize corn crops last year were of the Early Mastodon variety, Alfred Rose, of Yates Co., N. Y., raised a crop of 191 bushels, and Geo. Gartner, Pawnee Co., Nebraska, 151 bushels, each on a single acre. This shows at once the great productiveness of this variety, and its adaptability to widely separated parts of the country. It is a yellow dent corn, with very large ears, small proportion of cob, and early ripening. It is sold by Wm. Henry Maule, Philadelphia, who also advertises the Polaris potato, an extra early variety.

A Model Creamery. — A. H. Reid, of Philadelphia, the well-known manufacturer of creamery and dairy supplies, has issued a little pamphlet containing illustration and ground-plan of a new creamery which he has built, and is now operating. It is built to operate on the Separator system, and is capable of handling the product of 500 cows, or of 12,000 pounds of milk, per day. It has many labor-saving inventions, which simplify and add to the efficiency of the working of the creamery. Persons interested in dairying and butter-making, or those operating or about to build creameries, would do well to write to Mr. Reid, at 30th and Market streets, Philadelphia, for a catalogue.

A New Plant.—The Huber Manufacturing Co., of Marion, Ohio, whose farm engines and thrashing machinery have attained a wide celebrity, have completed a fine new plant for the manufacture of their machines. The new plant comprises about 200,000 feet of flooring, the buildings being all of brick, from one to three stories high. With these improved facilities the company is in position to promptly fill its orders for the current year. The several departments are under the management of skilled men, the whole being under the direct superintendence of Mr. Edward Huber, President of the company, who is recognized as one of the foremost inventors of traction engines and grain separators in the country. Mr. S. E. Barlow, Treasurer, is the able manager of the financial department.

Southern Land. — The eager rush which occurs whenever a new tract of Indian reservation is opened for settlement, shows how land-hungry are the American people. It is needless, however, to endure hardship and peril in quest of Northern lands, when thousands of acres of rich and beautiful country is smiling under a Southern sun, along the line of the Mobile & Ohio railroad. This land is abundantly watered and timbered; it is free from liability to droughts, blizzards, and extreme cold. Three-quarters of a million acres are owned by the railroad company, are for sale in tracts of any size. An equal amount of government land is open to homestead entry. See the advertisement.

A Farmer's Convention.—If the first Farmer's Convention which meets should adopt the following "Declaration of Independence," their labors would be appreciated by millions of the hard-working tillers of the soil, who need just what this declaration recommends: "When, in the course of human events, rascality and dishonesty become so apparent as to demand immediate correction, we, the farmers of the country, in self-defense, arm ourselves with Jones's Scales, that we may get honest weight. Our platform is sixteen ounces to the pound, and we believe that the best and cheapest scales are made by Jones of Binghamton, Binghamton, N. Y., U. S. A."

The Season in Washington. — G. F. C. McCrea, Stevens Co., in the new State of Washington, writes: We had a long, cold winter here. The thermometer marked as low as 34°, with deep snow. It was not until the last of March that stock could be turned to grass. Hay became scarce in some parts of the State, though there was plenty in this valley. In weighing and baling hay, I observed a great discrepancy between the ordinary computations and the actual test of the scales. We have been accustomed here to compute as a ton 512 cubic feet of hay after it is well settled in stack or barn. But, when weighed out and baled, we found it would not hold at the computed rate. One stack of timothy, which should have weighed 125 tons at the above rate, when weighed and baled made only 100 tons. In my own barn, twenty by fifty feet, filled with clear timothy, fourteen feet deep, was found to be only a little over twenty tons, instead of the twenty-seven which the usual rate of calculation would have given. Our experience has shown that 700 cubic feet of loose hay are required for a ton, instead of 512, as has been computed.

Blacksmithing on the Farm. — Nowhere does the adage "a stitch in time saves nine" apply with more force than in the care of farm machinery. A breakdown in the busiest season and a trip to the blacksmith's shop, only to find other customers ahead, are among the most exasperating experiences of farm life. These and a thousand similar ones may be saved by having a practicable outfit at the farm. The Portable Forge and Combined Anvil and Vice, made by the Holt Mfg. Co., together with the complete set of blacksmith tools furnished by the same company, give the farmer complete immunity from the calamities alluded to above. Farmers are waking up to the fact that they can not only heat iron but can handle it, such as to weld it, harden, and temper it, and the many other processes, heretofore supposed to belong to trained blacksmiths exclusively. With one of these forges and some tools, no article on a farm, ranch, or plantation need be out of repair, a chain can be mended before breakfast, a plow sharpened at noon time, or a bolt made and fitted before supper.

A Beautiful Prize.—We illustrate herewith the object of art awarded at the Paris Exposition as a special grand prize to the Whitman Agricultural Company, of St. Louis, Mo. Besides the special prize the Whitman Agricultural Company received the grand gold medal and diploma for their hay- and straw-presses. The awards were made after a trial of one week, in which hay-presses from England, France, Germany, Austria, and America were in competition. The President of the French republic, with several of his ministers, and representatives of various European governments, as well as many Americans, watched the competition with eager interest. The statuette illustrated herewith is of bronze, with base of black marble. This is only one of many trophies awarded to this Company during the last ten years for its unrivaled hay- and straw-presses. In fact, these presses have won first prizes at every exhibition and field trial in which they have been entered and have never been beaten. Send for circulars to Whitman Agricultural Co., 8th street and Clark avenue, St. Louis, Mo.

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Mention Agriculturist.

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75c.,	regular price		$1.25
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These goods are from the looms of the best European manufacturers.

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everywhere should secure exclusive territory for the sale of one of the most valuable inventions of the age, the **Webster Elastic Draught.** This invention consists of two elastic steel springs fastened to under side of cross bar, as shown in the cut, and can be attached to any vehicle or sleigh in 15 minutes. It removes all horse-motion; no shocks or jars; no sudden jerks or starts; no more noise or rattle; no catching of the reins or horse's tail. It gives great ease and comfort. It is far stronger and safer than the whiffletree, and presents a far neater appearance. It is the draught of the future. Thousands of them now used and indorsed by horsemen everywhere. Territory is extremely valuable, as the business is permanent and yields immense profits. Exclusive territory free. We guarantee satisfaction.

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Dainty Pen Knife

For Lady or Gent, 2 blades; ivory; finest steel; sample post-paid, 50c.; pearl handle, 75c.
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HAVE YOU TRIED IT?
IT IS A PERFECT BUTTER COLOR
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This is the strongest, cheapest and best Butter Color ever made or sold in any market. A 25-cent bottle will give the finest June tint to 500 lbs of winter butter. Send for circulars and prices if your dealer don't keep it.

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is the Strongest and Best Self-Regulating Wind Mill made. Full instructions for erecting sent with the first mill. **All Wind Mills warranted.** For Circulars and Prices address
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Send for large Illustrated Catalogue.

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Why Seeds Fail to Grow.

There are many reasons why seeds fail to grow. One great cause of failure is immature seed. The great aim of the seed-grower is quantity; to get the most from the plant, rather than the best. The first fruits are often permitted to ripen seeds, for seed purposes, which should never be, as the first settings and ripenings are usually imperfect. The same is true of the last of the plant's production; they are weak in vitality, and the seeds produced will have a tendency to perpetuate that weakness. It is of the utmost importance that seeds should have attained perfect maturity, and should have been carefully and healthily preserved. Immature seed may, it is true, possess the power of germination, but it always retains a disposition to disease and weakness. Weakness perpetuates weakness, and unshapely forms and poor qualities are transmitted. Good cultivation, under favorable circumstances, will, in a great measure, restore vitality, but it is a question of time, accompanied by a degree of uncertainty that the farmer and gardener cannot afford, as there is a liability of failure, or partial failure of crop from this cause; the responsibility, in a great measure, rests upon the seed-grower.

Seeds, saved with the utmost care from carefully selected stocks, may lose their vitality if they are not properly preserved. All seeds of vegetables or flowers should be kept perfectly dry, cool, and in an airy situation; they ought to be carefully protected from dampness, and should be kept in a room that is not alternately moist or dry. An even temperature and humidity is essential to the seed's vitality.

Carelessness in planting is one of the principal causes of failure. The soil should be carefully prepared before the seeds are sown; it should be worked deep, and made fine, and, when the seed is sown, the soil should be firmly pressed about them. This has been practiced by the systematic horticulturists for centuries, and, for this purpose the garden- or farm-roller was employed, as much to break up the lumpy soil as for any other object. The spade was used for packing the soil firmly about the seed. The modern plan, "the use of the feet in seed-sowing," is one of the most effective, practical and convenient methods, as the feet are always with the gardener and ready for use when required, a fact that admits of no excuse if the work is neglected. The influences that act upon the seed to cause growth are heat, air, and moisture, and without a proportionate amount of each there can be no plant life. Now, it follows that when a seed is put into the ground, and loosely covered with light, dry soil, it does not come in contact with sufficient moisture to soften its coating, neither is there sufficient heat, because of the too great circulation of air around the seed, to produce the chemical changes upon which vegetable growth depend. When we place a seed into the earth it commences growth in two opposite directions, upward into the atmosphere, and downward into the earth. The first root the seed puts forth does not furnish the young plant with food for its development; it simply holds the plant in place until the true roots, by which the plant is fed, are formed, after which it becomes a part of the plant itself. The cotyledons, or seed-leaves, contain the food of the infant plant until its true leaves and roots are formed. If the soil is not firmly pressed around the main root, these feeders will have nothing to feed upon; they must come in immediate contact with moisture, or the warm, dry air will destroy them, and the whole plant will stand still until new roots are formed, or, in the meantime, perish. Herein lies the benefit of firmly pressing the soil around the seed when planting.

Deep planting is another frequent cause of failure. Take, for instance, sweet corn, and cover in planting from one-half inch to five inches in depth. The former will germinate, if the seed is good, without a loss of five per cent, and the latter will not grow five per cent, and the exact ratio between the two will be kept up. The cause for the difference is, that the conditions of growth are not complied with—the deficit being heat, which, at the season for corn-planting, cannot be furnished at so great a depth from the surface. As a rule, not more than one-quarter of an inch of soil should be put over the seed. Very fine seed should only be covered from sight. Proper care in seed-sowing, and the too common practice of burying seeds, is just the difference between success and failure in their germination and growth.

Mechanical assistance, or the manner of placing the seeds in the earth, is of greater importance than is generally supposed, particularly those of the gourd family, or any large and flat seeds. It is economy to plant all vine-seeds edgewise. Lima beans should always be placed edgewise, germ down. The same is true with the seeds of the hybrid amaryllis. If sown flatwise, they will rarely make a plant; if sown edgewise, rarely one will fail, under the same conditions of soil and temperature. Any careful experimenter can easily explain how one man could complain of the seed sown, while another would kindly praise the seedsman for seed from the same stock, and will become convinced that, very often, seeds not growing is more due to poor sowing than to poor seeds.

A Proud Eminence.—While science, art, and literature generally have been on the onward march, the AMERICAN AGRICULTURIST has surely kept in line, both as to matter and mechanical execution. It certainly deserves to occupy a proud eminence among its rivals in the field for the farmers' patronage.

DR. H. E. WARD, Marion Co., Ind.

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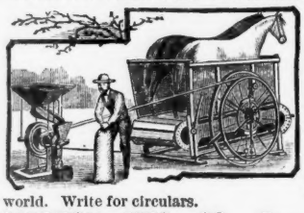

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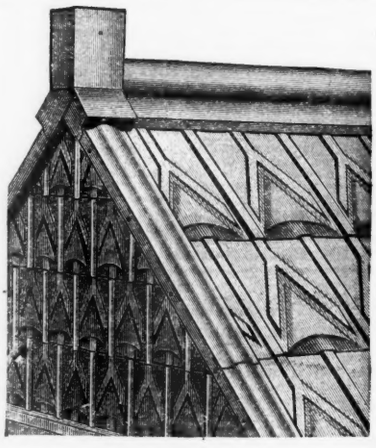

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Holstein-Friesian Breeders.

The annual meeting of the Holstein-Friesian Association of America was held in New York, February 19. The report of the secretary showed the last year to have been one of unbroken success for the interests of the breed. The receipts from all sources were $22,702. Among the expenses is one item of $2,980 for 596 bulls, at $5 each, castrated or killed during the year. Only 2,618 bulls were recorded, being 852 less than in 1888. There have been recorded 20,279 bulls and 32,106 cows, making 52,385 animals in all. Volume VI. of the herd-book is now in press. An increased interest in the advanced registry was reported. The board of officers was empowered to offer special premiums for Holstein-Friesians at various fairs and exhibitions, and also to expend $2,000 for copies of the monthly *Holstein-Friesian Register*, to be sent, for advertising purposes, to persons whose names are to be furnished by members of the Association.

The following officers were elected: President, D. H. Burrill, Little Falls, N. Y.; Vice-Presidents, George D. Wheeler, Deposit, N. Y., W. M. Liggett, Benson, Minn., John A. Frye, Marlboro, Mass., John B. Dutcher, Pawling, N. Y.; Secretary, Thomas M. Wales, Iowa City, Iowa; Treasurer, W. Brown Smith, Syracuse, N. Y.; Superintendent of Advanced Registry, S. Hoxie, Whitesboro, N. Y.; Directors, W. G. Powell, Springboro, Pa., T. L. Yeomans, Walworth, N. Y., W. M. Singerly, Philadelphia, Pa. The next annual meeting is to be held in Syracuse, N. Y.

An address was delivered by Dr. Peter Collier, director of the agricultural experiment station at Geneva, N. Y. His subject was "How to Make Dairying Profitable." A paper was read by Benjamin C. Sears, of the New Jersey experiment farm, which was followed by general discussion.

Oxford-Down Sheep-Breeders.

The annual meeting of the American Oxford-Down Sheep Record Association was held at Cincinnati, March 12th. The medals offered at a former meeting were awarded as follows: Gold medal for ram and five of his get at International Fair, Buffalo, to J. R. & W. A. Shafor, Middletown, Ohio; gold medal for same at St. Louis, to Stone & Harris, Stonington, Ill. Resolutions were adopted which provided for a gold medal to be offered for the best flock of Oxford-Downs at a Canada fair, the same for the best Oxford-Down ram and five of his get exhibited at St. Louis Fair, and a silver medal for the best flock of Oxford-Downs at Minnesota State Fair. Shearing before April 1st, improper or stubble-shearing, is to disqualify any sheep for competition. The following officers were elected: President, Col. F. C. Goldsborough, Easton, Md.; State vice-presidents, C. F. Wilson, Greenfield, O.; J. R. Cunningham, Patriot, Ind.; R. C. Estill, Lexington, Ky.; A. G. Goodlet, Clarksville, Tenn.; W. F. Loake, Flora, Ill.; T. S. Cooper, Coopersburg, Pa.; secretary and treasurer, W. A. Shafor, Middletown, O.; directors, R. J. Stone, Stonington, Ill.; L. W. Brown, Wauseon, O.; T. W. W. Sunman, Spades, Ind.; R. M. Jacoby, Hamilton, O. The next meeting is to be held at Columbus, O., in conjunction with the agricultural convention in January, 1891.

Catalogues, Etc., Received.

AMERICAN MANUFACTURING CO., Waynesboro, Pa.: The "American" Evaporator, for drying, curing, and dessicating all produce.

H. S. ANDERSON, successor to Farley & Anderson, Union Springs, N. Y.: Wholesale trade-list of the Cayuga Lake Nurseries.

C. AULTMAN & CO., Canton, Ohio: Illustrated and descriptive catalogue of threshers and engines.

P. J. BERCKMANS, Augusta, Ga.: Greenhouse, bedding, and new plants at Fruitland Nurseries.

GEORGE W. CAMPBELL, Delaware, Ohio: Descriptive list of hardy grapevines and small fruits.

CHARLES DADANT & SON, Hamilton, Ill.: Circular of aplarian supplies, with instructions to beginners.

GEORGE S. JOSSELYN, Fredonia, N. Y.: Grapevines, small-fruit plants, etc.

GILLETT & HORSFORD, Southwick, Mass.: Wild flowers, shrubs, trees, and vines. This brings into notice the beautiful but neglected wildlings of American forests, fields, and waters.

J. T. LOVETT CO., Little Silver, N. J.: Novelties and wholesale price-list of fruit and ornamental trees, shrubs, and plants.

PIKE COUNTY NURSERIES, Louisiana, Missouri: Annual wholesale price list (No. 3), fall and spring of 1890.

W. W. RATHBONE, Manetta, Ohio: Circular and price-list of sweet potato plants.

LEWIS ROESCH, Fredonia, N. Y.: Descriptive catalogue and price-list of grapevines, small-fruit plants, etc.

TEMPLE & BEARD, Cambridge, Mass.: Catalogue of choice hardy perennials at Shady Hill Nurseries, including many now offered for the first time.

WILLIAM STAHL, Quincy, Ill.: Circular of "Lady Rusk" strawberry.

JAMES M. THORBURN & Co., New York: French hybrid gladiolus, lilies, amaryllis, and other spring bulbs, etc.

VILMORIN-ANDRIEUX ET CIE, Paris, France: Catalogue des graines d'arbres et d'arbustes de pleine terre et de graines de plantes d'orangerie et de serre.

J. P. WILLIAM & BROS., Henaratgoda, Ceylon: Bulbs and tubers of tropical plants.

Purify Your Blood

The importance of thoroughly purifying the blood **This Spring** cannot be over-estimated. The extraordinary epidemic of "the grip" and other diseases, the unhealthful winter, close confinement indoors and carelessness in diet, have caused accumulation of impurities in the blood which must be expelled before you can feel well and strong again. The universal praise given Hood's Sarsaparilla by those who have taken it, should certainly convince you that it is the ideal **Spring Medicine.** It acts especially and immediately upon the blood, overcomes physical weakness, revives the health-tone and creates a good appetite. Try it this Spring.

N. B. If you decide to take Hood's Sarsaparilla do not be induced to buy any other.

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100 Doses One Dollar.

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McMULLEN'S FARM FENCING

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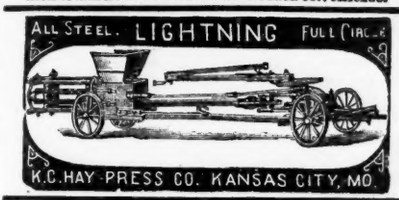
Write to THE McMULLEN WOVEN WIRE FENCE CO., CHICAGO.



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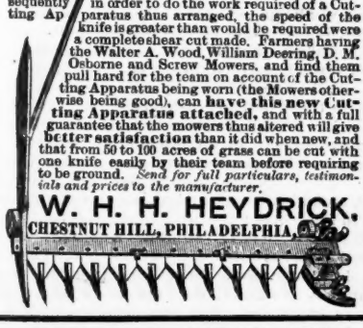
HEYDRICK'S IMPROVED Cutting Apparatus FOR MOWERS.

After two years of practical successful mowing in various kinds of grass, and under various conditions, on salt meadows and upland, this Cutting Apparatus is offered as one that stands **UNEQUALED FOR MOWERS.** This is a **STRONG, SUBSTANTIAL** arrangement, and is **fully guaranteed,** always maintaining a **complete shear cut.** Every practical man, whether manufacturer or user of the old style of Cutting Apparatus, (having stationary ledger plates in the guards) knows that it is impossible to maintain a complete shear cut for any length of time, and consequently in order to do the work required of a Cutting Apparatus thus arranged, the speed of the knife is greater than would be required were a complete shear cut made. Farmers having the Walter A. Wood, William Deering, D. M. Osborne and Screw Mowers, and find them pull hard for the team on account of the Cutting Apparatus being worn (the Mowers otherwise being good), can **have this new Cutting Apparatus attached,** and with a full guarantee that the mowers thus altered will give **better satisfaction** than it did when new, and that from 50 to 100 acres of grass can be cut with one knife easily by their team before requiring to be ground. *Send for full particulars, testimonials and prices to the manufacturer.*



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CHEAP STRONG **WATER PROOF,** Applied by our new Patent method with ⅓ the labor of any other way. Unlike any other roof. **No rust or rattle.** An **Economical** and **DURABLE SUBSTITUTE** for **PLASTER** on walls. **Ornamental CARPETS** and **RUGS** of same material, **cheaper** and better than Oil Cloths. Catalogue and **Samples Free.**

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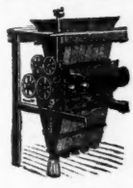

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Wall Plaster and Fertilizers,

MANUFACTURED BY

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329 W. Water St., Syracuse, N. Y.

Illustrated Catalogue *free.*

"OSGOOD" U. S. Standard **SCALES**

3 TON $35. Sent on trial. Freight paid. Other sizes proportionately low. Fully Warranted.

OSGOOD & THOMPSON, Binghamton, N. Y.

FOR 26 CENTS in stamps, we will send this beautiful **Gold Plated Ring** to any address. Not like the cheap rings advertised. This ring is **warranted to wear for years.** This **wonderful offer** is made to introduce our watches and will never appear again. **Order immediately.** Address **THE WARREN COMPANY, Minneapolis, Minnesota.**

$5 TO $8 A DAY. SAMPLES WORTH $2.15 Free. Lines not under horses' feet. Write **Brewster Safety Rein Holder Co., Holly, Mich.**

FARMERS Saw and Grist Mill. 4 H.P. and larger. Catalogue free. **DeLOACH MILL CO., Atlanta, Ga.**

ANIMAL AILMENTS.

Swelling at the Stifle of a Colt.—Frank J. Gradt, Saginaw Co., Mich., has a six-months-old colt that hurt his stifle, which injury has left a movable swelling the size of a hen's egg. Daily rub on the swelling and a space an inch all around it an ointment made of half an ounce of iodide of potassium, finely powdered, and well mixed with four ounces of lard. This, applied to the bunch with the fingers and thoroughly rubbed in, in quantity the size of a hickory-nut, may remove the tumor.

Caked Bag.—Azmoth Bozeman, Coleridge, Ala., has a Shorthorn heifer that has a caked bag. Her calf came prematurely, and he milks her, but he cannot get the milk all out. For the relief of this trouble, take warm lard and rub the udder downward for two or three minutes before milking, which should be completely done three times a day, with gentle perseverance. Unless this is persevered in, some portion of the udder may be so much impaired that the usefulness of the heifer may not make it profitable. If a cow does not more than earn her keep, she should be fatted and slaughtered. The Shorthorns are predisposed to fatten, and will do so profitably.

Lousy Sheep.—Charles Huntley, Llano Co., Texas, writes us that he has recently purchased a flock of sheep that he has had confined within a small yard; he has fed them well, but they nearly all look like ragged beggars; wool sticks out loose all over them, and he is ashamed to have any one see them. "They pay more attention to rubbing than grubbing." In all probability these sheep were lousy before you purchased them. Crude carbolic acid sponged around the nose below the eyes, around the ears, and at the root of the tail, and in the roots of the wool along the back, will soon relieve them of the pest. Especially wherever the wool is torn out apply the acid. Prevention is most useful. Neglect to treat the first symptoms or signs of the presence of parasites is always bad policy. The speediest relief is the best and cheapest. White precipitate ointment—used with great caution—is the most reliable remedy for lice in the human or in the animal subject.

Palpitation of the Heart.—Though the horse is more liable to palpitation than other domestic animals, yet the cow, sheep, and dog are more or less frequently affected. When the heart is not organically diseased or altered in structure, it is caused by excessive labor, fast and long-continued driving, or fright when in poor condition, over-feeding, and rapid exercise immediately after feeding, and especially if bad or indigestible food has been too frequently given. One of the most baneful habits is hurried driving in the morning, to catch the train. This is especially the case with horses used in the country by city business men, who wait until the last minute and then furiously drive a gorged horse or team over bad roads. In all heart troubles the animal should be kept quiet, and have administered to it, as soon as possible after the distress abates, an ounce of bromide of potassium, dissolved in a quart of water. When the animal is in great distress, turn the head to the wind, cover it, girth it, and especially if it be of a nervous temperament. The thumping is so violent at times that the whole body is agitated alarmingly. If the animal is weak or underfed, care must be taken to correct this condition. So, also, if too high in condition, it should have its feed reduced.

Tumor on a Horse's Leg.—John B. Ogden, McIntosh Co., No. Dakota, has a valuable mare that has a small tumor just below the left knee in the inside, that makes her slightly lame when ridden. In his section, he says, there are no educated veterinarians. The young graduates of veterinary colleges should read the AMERICAN AGRICULTURIST to learn where to locate. It is certain that the "Great West" must largely raise our horses and cattle, and that these are the locations that will give more profitable professional employment to educated veterinarians than the cities and villages of the East. The cause of the "bunch" may have resulted from strain, and unless the tumor is fixed and adherent to the bone, it may be removed by the following absorbent ointment: Biniodide of mercury one ounce, lard one pound. These should be rubbed together so that the incorporation is perfect. Then, with a folded piece of cotton cloth bound upon the middle of one side of a piece of shingle, the ointment can be thoroughly rubbed in without touching the hand. "Elbow grease"—plenty of friction—will be secured. Anything half done is next to useless. Thorough and regular applications to such cases must be made in order to get favorable results. The mare is also stocked in her hind legs. The swelling of the legs usually results from a torpid function of the kidneys and stomach. Give in the feed, night and morning, a powder composed of sulphate of iron one drachm, gentian one ounce, nitrate of potash two drachms; all finely powdered and well mixed. If the mare is well-bred we advise putting her to breeding, and then giving her lighter work.

Hogs Killed by Eating Mangel-Wurzel.—Guy MacL. Richards, Santa Barbara Co., California, writes us that for three months he fed twenty sows exclusively on sugar-beets. As soon as the beets were exhausted, he commenced feeding mangel-wurzel. The mangels were very large, ten of them weighing as follows: Forty-one, forty-two, sixty-two, fifty-seven, sixty, forty-one, fifty-six, forty-one, thirty-seven, thirty-seven, or an average of forty-eight pounds each. At first he let the mangels wilt before feeding, but afterwards fed them fresh from the field, when the sows "began to show signs of distress, being seized with a vertigo, lying quivering and gasping." He asks if there is anything in the mangels that is not in the sugar-beets, that could poison the hogs? It has long been known that *very large* mangel-wurzel are, as Sir John B. Lawes once said, "simply bladders of salt and water." They have been found to contain ninety-six per cent of water, and the four per cent of actual food is of a very low order. A good fair-sized mangel should contain twelve per cent of dry matter, or three times as much food in a ton as these monsters. And the food itself is more nutritious. Mangels and turnips, like apples, have to "ripen." Green winter-apples, eaten in August are no more likely to disorder the stomach than unripe mangels or turnips. Hogs are very fond of mangels, but they should always have some other food with them. This is especially true of these large, overgrown mangels that contain so much water and so little real food. To make a hog swallow fifty quarts of water to get four pounds of poor food is not good economy. The essential difference between mangels and sugar-beets is that the mangels contain more water than the beets. Beets and mangel-wurzels are the same species. One has been bred with reference to producing a root containing as little water as possible; while the other has been bred for size without regard to quality. There are sugar-beets that contain twenty-five per cent of dry matter, and there are mangels that contain only four per cent. One hundred tons of the latter have been grown on an acre, but they are not worth as much as fifteen tons of the former. It is possible that the long growing season of California may produce large beets or mangels that are of better quality than such monstrous mangels would be when grown in our shorter seasons. But it is unquestionably a mistake, everywhere, to grow for size alone. We should aim at quality rather than at growing a great mass of poor, innutritious food.

Congestion of the Lungs, or Pulmonary Apoplexy.—This is an engorgement of the large blood-vessels of the lungs. It is not inflammation, but, if death does not supervene or relief be promptly rendered, inflammation of a fatal character—pneumonia—will set in. The cause is severe and long drives, and especially when the horse is somewhat out of condition. This affection destroys many of the best and fastest horses, that have cost the owners large sums of money. The exhaustion of the nervous energies renders the blood-vessels powerless to contract upon the large volume of blood, thus prostrating the system, causing intense distress, the heaving of the flanks, the spasmodic contraction of the nostrils, tremors, cold sweat, twitching of the tendons, distressed expression, dullness of eyes, lopping of the ears, and cold ears, legs, and skin. Unless prompt relief is given, the poor horse will suffocate. Putting a horse in a heated, exhausted, and sweating condition into a cold, damp, or into a close, hot, illy-ventilated stable will often predispose to or excite internal congestion. A stable extremely heated by the sun's unimpeded rays, when a horse is exhausted from severe driving, is sufficient to cause a depressing shock, which will result in congestion. The treatment must be of the most active character. Set active hands to rubbing the head, ears, neck, and body with dry flannel cloths, to excite local circulation, so as to invite the blood from the central to the external vessels. Bathe the legs and feet in hot water, and then bandage them in flannel bandages, and clothe the horse from head to foot with warm, light, woolen blankets. But first, or as soon as it can be procured, give a dose of whiskey and water—half a pint of each—every twenty or thirty minutes, and followed with sulphuric ether and laudanum, of each two ounces, in a pint of water. Give water frequently, in small quantities. The stimulants and narcotics may be alternated every quarter or half hour, as the emergency requires. Should the blankets become moist with sweat, they should be replaced with dry ones, and the rubbing repeated. Put the animal in a cool, airy box-stall, avoiding all draughts. The preventive measures are, the free and constant use of common sense in handling and driving our most valuable domestic animal.

Science in Corn-Growing.

Very properly the most extensive tests with corn have been made at the Illinois Station. They are described with faithful detail by Prof. T. F. Hunt, and the practical conclusions intelligently drawn by Prof. G. E. Morrow, in Bulletin 8. The average amount of water in air-dry corn in Illinois was found to be just about eleven per cent. The calculations of the crib-cured corn in the AMERICAN AGRICULTURIST prize corn crops was based on ten per cent of moisture, which, therefore, may have been under rather than above the average. The amount of water in the Illinois corn when husked varied from sixteen to thirty-eight per cent, early-maturing varieties being the dryest, while the medium-maturing contained an average of twenty-three per cent of water, against twenty-two per cent as the average amount of moisture in the AMERICAN AGRICULTURIST forty-five prize crops. The shrinkage after husking varied from ten to twenty per cent, and fully eighty pounds of corn on the ear were required to make a bushel of air-dry or "crib-cured" corn. Prof. Morrow finds that no one variety is best for his latitude, and that the earliest kinds require 125 days to mature, so that such phrases as "ninety-day" corn or "one-hundred-day" corn are misleading. Barrenness of stalk seems to depend more on the thickness of planting than on variety, and a moderate difference in date of planting did not affect the yield. Depth of planting did not affect the seed, but one kernel, every nine or twelve inches, in rows forty-four inches apart, proved best.

Foreign Notes.

The bee industry is quite important in Ireland. About 30,000 swarms were kept last year, producing some 500,000 pounds of honey. Ulster county is the center of this business.

During the year 1889 the foot-and-mouth disease spread in nearly every part of the German empire. In July, August, and September alone 78,501 cattle were attacked, 58,530 sheep, 729 goats, and 15,917 swine.

The English market is largely supplied with Danish butter furnished by the co-operative creameries of that highly-cultivated country. English farmers are greatly alarmed at this competition, although twenty per cent of the receipts for Danish butter are required to pay the transportation and selling charges.

The Prussian government expends $245,000 annually for agricultural instruction in addition to the $190,000 devoted to veterinary instruction. While the education received at the agricultural colleges is mainly theoretical, primary and intermediate agricultural schools are also supported, in which a more practical instruction for farmers' and laborers' sons is carried on, at an expense for each student of $5 semi-annually. At these schools the teaching, besides general instruction, includes chemistry, mineralogy, physics, zoology, veterinary science, botany, and farming.

Worth its Weight in Gold.—I would not be without the AMERICAN AGRICULTURIST for its weight in gold.
D. M. HOWELL, Dorchester Co., Md.

REALLY A LIVE MAN TO DAY!

"DRS. STARKEY & PALEN:

"One who was said, by the physicians and friends, not to be able to live three months.

"I had about seventeen hemorrhages, with thousands of aches and pains.

"This was in November, 1886.

"I have lived from that time to this on your Compound Oxygen Treatment.

"My existence to-day is owing to the Treatment and good care.

"I have also found that you are always prompt in your correspondence with your patients.

"Words cannot express my feelings towards your Compound Oxygen Treatment.

"I highly recommend it to all who are in need of it. A. H. OVIATT.

"44 Crawford street, Newark, N. J.,
"Thanksgiving, 1889."

"DRS. STARKEY & PALEN:

"It is now over a year since I began using your Compound Oxygen Treatment for the cure of a *serious lung trouble* of more than four years' standing.

"After taking three successive Treatments I feel wonderfully benefitted, *I may say cured.*

"It is now six months since I discontinued its use. B. R. BROWN.

"Roseburg, Texas, Dec. 12, 1889."

"DRS. STARKEY & PALEN:

"Since using your Compound Oxygen Treatment the soreness has entirely disappeared from my lungs.

"In the two months I have been using your Compound Oxygen Treatment my weight has increased from 112 to 128 pounds—16 pounds gain.

"My chest measure has increased from 32 to 34½.

"Instead of being constantly tired and discouraged, I am now quite strong and very hopeful.

MRS. FRANK C. BROOKS.

"2729 Colfax Ave., S. Minneapolis, Minn."

"DRS. STARKEY & PALEN:

"A few years ago I tried your Compound Oxygen Treatment for my *throat*, which was badly diseased. *It cured me, and the cure has been permanent.* MRS. A. R. BURGETT.

"401 Sullivan St., Elmira, N. Y., Nov. 11, 1889."

"DRS STARKEY & PALEN:

"My lungs, when I wrote you last, were troubling me severely, but in about three weeks they began to improve, and have kept on improving steadily. MRS. LYDIA B. CHASE.

"Newport, R. I., Oct. 30, 1887."

"DRS. STARKEY & PALEN:

"I cannot find language strong enough to one-half cover the debt of gratitude I owe to you, under God's blessing, attending your efforts in my case.

"Since I wrote you I have surprised myself and every one around me to find a steady increase in strength and health.

"My lungs feel as if they had been made over again. MRS. LYDIA B. CHASE.

"Newport, R. I., two years later, Nov. 22, 1889."

'DRS. STARKEY & PALEN:

"I have received the greatest benefit from your Compound Oxygen Treatment, for which I am deeply grateful.

"All other remedies failed to do my lungs any good. I think your Compound Oxygen is the only safe remedy for the cure of *lung disease*, as well as what other diseases it claims to cure.

"I can testify that it has been of the greatest benefit to me in relieving many ailments.

"I was particularly afflicted with lung disease. I recommend it to all my friends.

"MRS. SARAH HUNT.

"Seclusion, Texas, April 4, 1889."

"I DID IT."

Dumas did not believe in his son's ability.

So when the young man asked his sire to come to the first night of "Camille" he grudgingly consented.

As the play progressed, Dumas said, at one point, "That's fair!" at another, "Good!" at another, "Excellent!" and at the startling climax he exclaimed: "I wrote it myself!"

Drs. Starkey & Palen's Compound Oxygen Treatment on its introduction met with just such treatment.

Some laughed, some sneered, some cried "Impossible!"

But result is unanswerable.

The Compound Oxygen Treatment at once began to cure disease--cure permanently.

Not in one instance, but in thousands.

Then the physicians who laughed, admitted its value.

They used it in their practice.

Others imitated it and made a business of imposing on the credulous.

This was 20 years ago.

To-day Drs. Starkey & Palen's Compound Oxygen Treatment stands alone in its remarkable record of cures.

A book of 200 pages will tell you who have been cured--show where these revitalized men and women live--describe the diseases removed.

A postal card containing your name and address is all the book will cost you.

You will get it by return mail.

Its pages are filled with such evidence as you will find in the opposite column.

The Compound Oxygen Treatment is blood food--nerve nourishment.

Inhaled directly to the breathing surfaces.

At once the blood absorbs it.

Circulation is quickened, and has something fit to circulate.

There is a renewal of energy--a response all over the system.

A rally of strength--a rout of disease.

Send for the book and find out all about it.

Address Drs. Starkey & Palen, No. 1529 Arch street, Philadelphia, Pa., 120 Sutter street, San Francisco, Cal., 58 Church street, Toronto, Canada.

A STRONG CASE.

"DRS. STARKEY & PALEN:

"Language cannot express my gratitude to God for his wonderful guidance in the matter of using your Compound Oxygen Treatment. My daughter was afflicted with those dreadful *hemorrhages of the lungs* and with a most *distressing cough*. The best physicians gave up her case as hopeless, and I stood over her night and day expecting every hour would be her last. She was wasted to a mere skeleton, past speaking, and entirely exhausted. I then met a neighbor who asked me concerning my daughter; with faltering lips I replied, 'There is no hope of recovery.' She at once said, 'Do try the Compound Oxygen Treatment; it cured me when given up by physicians.' I replied, 'She is so far gone I am afraid to try anything.' But her words rang in my ears incessantly and at last I spoke to my doctor about it. He said, 'There would be no harm done by trying the Compound Oxygen Treatment; try anything you think may benefit; it is my opinion that it is only a matter of a short time.' But as long as a spark of life remained I was determined to try something, and this determination has been abundantly rewarded.

"My daughter can now walk out with me and feels well. Her weight has increased eight pounds. Many are watching her case, as she is regarded as one raised from the dead. *No more hemorrhages! no more cough!* but sound sleep—good appetite and life a pleasure. All hail your Compound Oxygen Treatment. Would to God all consumptives might be induced to try your wonderful remedy.

"MRS. A. M. MILLER.

"958 Lafayette Ave., Brooklyn, N. Y., June 28, 1889."

"ACME" HAY STACKER AND SWEEP RAKES

OVER 40,000 IN USE BY GOOD FARMERS.

GUARANTEED SUPERIOR to any other Hay Rakes made. Simple and Strong. Will last a lifetime. Repays Cost Price on 40 Acres.

Enables 1 man and 2 boys to put up 20 tons of hay per day.

Gathers Hay Clean from swath, 800 lbs. at a load.

Special Price for Introduction.

Write at once for posters, circulars, full particulars. Address

ACME HAY HARVESTER CO. MANFRS., PEORIA, ILLS.

ASPINWALL POTATO PLANTER

Better than Ever.

PLANTS CORN

DISTRIBUTES FERTILIZERS

Absolute Guarantee given to do

PERFECT AND RAPID WORK.

Write for illustrated circular. *Mention this paper.*

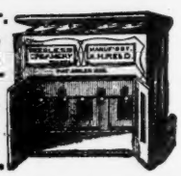
ASPINWALL MANUFACTURING CO.
THREE RIVERS, MICHIGAN.

REID'S PEERLESS CREAMERY

Absolute Perfection for Best Quality Butter.

BUTTER WORKER

Also CHURNS, POWER BUTTER WORKERS, PRINTERS, SHIPPING BOXES.



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MARK C. FARR, Manufacturer and dealer in CREAMERY AND DAIRY SUPPLIES,

Engines and Boilers, Cream and Milk Vats, Weigh Cans. TEET'S Chicago and New York Steel and Iron Clad Cans.

J. F. SWAB "Jacketed Refrigerator Cans." The Best and Cheapest Can in the Market. J. F. SWAB "Ventilated Milk and Cream Cooler." Acknowledged by the best judges as the Leading Invention. Thousands in use and giving the best of satisfaction.

Revolving Box Churns, Butter Workers, Butter-Milk, Cream and Milk Strainers, Butter Cloth Circles, Tin and Acme Tub Clasps, DeLaval, Turbine, Belt and Hand Separators.

Complete outfits a specialty. Estimates furnished on short notice.

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Send for Illustrated Catalogue and mention this paper.

HAIR ON THE FACE, NECK, ARMS OR ANY PART OF THE PERSON

DISSOLVED AND QUICKLY REMOVED WITH THE NEW SOLUTION

MODENE

AND THE GROWTH FOREVER DESTROYED WITHOUT THE SLIGHTEST INJURY OR DISCOLORATION OF THE MOST DELICATE SKIN. DISCOVERED BY ACCIDENT.

In Compounding, an incomplete mixture was accidently spilled on the back of the hand, and on washing afterward it was discovered that the hair was completely removed. We purchased the new discovery and named it MODENE. It is perfectly pure, free from all injurious substances, and so simple any one can use it. It acts mildly but surely, and you will be surprised and delighted with the results. Apply for a few minutes, and the hair disappears as if by magic. It has no connection whatever with any other preparation ever used for a like purpose, and no scientific discovery ever attained such wonderful results. IT CANNOT FAIL. If the growth be light one application will remove it permanently, the heavy growth such as the beard or hair on moles may require two or more applications before all the roots are destroyed, although all hair will be removed at each application. Young persons who find an embarrassing growth of hair coming, should use Modene to destroy its growth. RECOMMENDED BY ALL WHO HAVE TESTED ITS MERITS.—USED BY PEOPLE OF REFINEMENT.

Gentlemen who do not appreciate nature's gift of a beard will find a priceless boon in Modene, which does away with shaving. It penetrates the hair follicle or sac and dissolves the life principle, thereby rendering its future growth an utter impossibility, and is guaranteed to be as harmless as water to the skin. Modene sent by mail, in safety mailing cases, postage paid (securely sealed from observation) on receipt of price, $1.00. Largest size bottle, containing three times as much Modene, and sufficient for any case, $2.00 per bottle. Send money by letter, with your full address written plainly. Correspondence sacredly private. Postage stamps received same as cash. (BE SURE TO MENTION YOUR COUNTY AND THIS PAPER.)

AGENTS WANTED. MODENE MANUFACTURING CO., CINCINNATI, O. MANUFACTURERS OF THE HIGHEST GRADE HAIR PREPARATIONS. GENERAL AGENTS AND ADVERTISERS WANTED.

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$1,000 REWARD. To assure the public of the merits of Modene, we send with each bottle a legal agreement to forfeit $1,000 to any Purchaser if Modene fails to permanently remove the hair, or discolors or injures the skin in the slightest manner, or produces any unpleasant sensation or feeling when applying or ever afterward. EVERY BOTTLE GUARANTEED. (Cut this out.)

$ DOLLARS $

SAVED to every body who buys Carts, Road Wagons and Buckboards direct from us. Send for CATALOGUE and Rock BOTTOM PRICES.

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Carts AND Carriages

of every description.

A special bargain for one person at each post-office, to introduce our work. Send 6c for information.

UNION MACHINE CO., Carriage Dept., No. 40, Philadelphia, Pa.

ROAD CARTS ONLY $10

The Best and Lowest Price

of any Carts Made. $15, $18, $20 and $25. Top Buggies, only $55.00. Harness $7.50 and $10.00. Forges, Anvils, Vises, Safes, Sewing Machines, Scales of all varieties. Save money and send for Price List.

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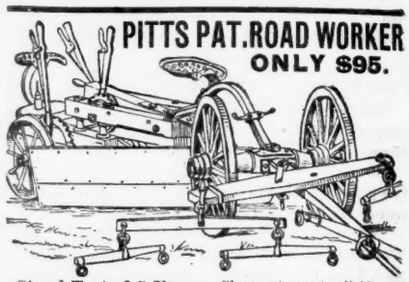
PITTS PAT. ROAD WORKER ONLY $95.



Stood Test of 5 Years. Cheapest, most reliable and best made Four-Wheeled Road Worker in the world. Send for circular to

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DUTTON GRINDER

Perfect Mowing Machine Knife Grinder

RETAIL PRICE $6.00.

Can be carried into field and attached to Mowing Machine Wheel. New Descriptive Catalogue free.

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BROAD-CUT Center-Draft EUREKA MOWER

SIZES: 5, 6 and 7 Feet

Saves over half in labor, and produces better quality of hay. An ordinary pair of horses will handle with ease. A DIRECT DRAFT what you want.

WIDE-CUT MOWER is

EUREKA SPRING TOOTH HARROW

Channel Steel Frame which clears all obstacles. Does not bury itself thus making it the lightest Draft Harrow in the market.

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$17 SPRAYING OUTFIT Express paid, for **$5.50**

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Makes 3 complete brass machines worth $12.

Will Thoroughly Spray a 10 acre **Orchard per day.**

Endorsed by the leading Entomologists of the U. S. A valuable illustrated book (worth $5) on "Our Insect Foes" given to each purchaser. My farmer agents are making from $5 to $20 per day. Send for illustrated catalogue, price-list and terms. GOODS GUARANTEED. Remember, *brass will not rust or corrode.* Address

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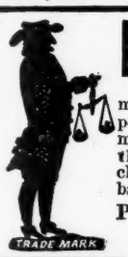

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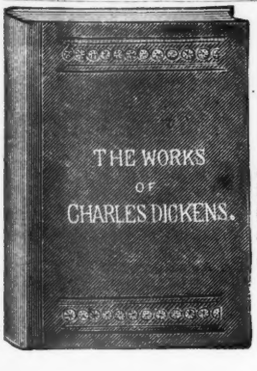

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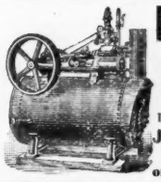

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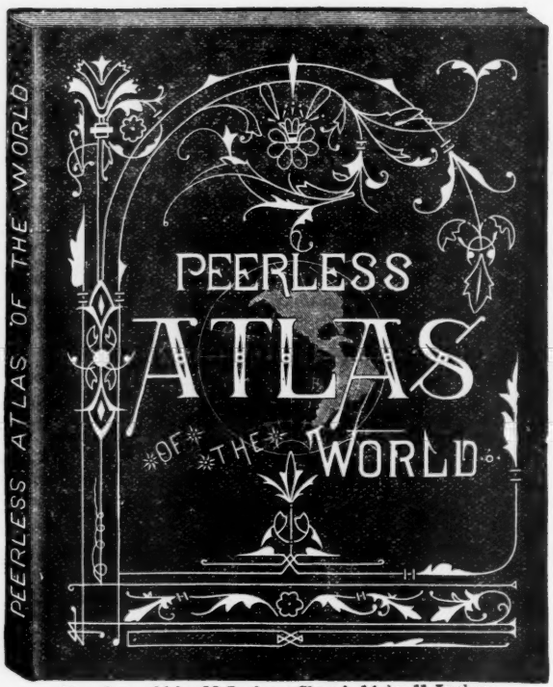

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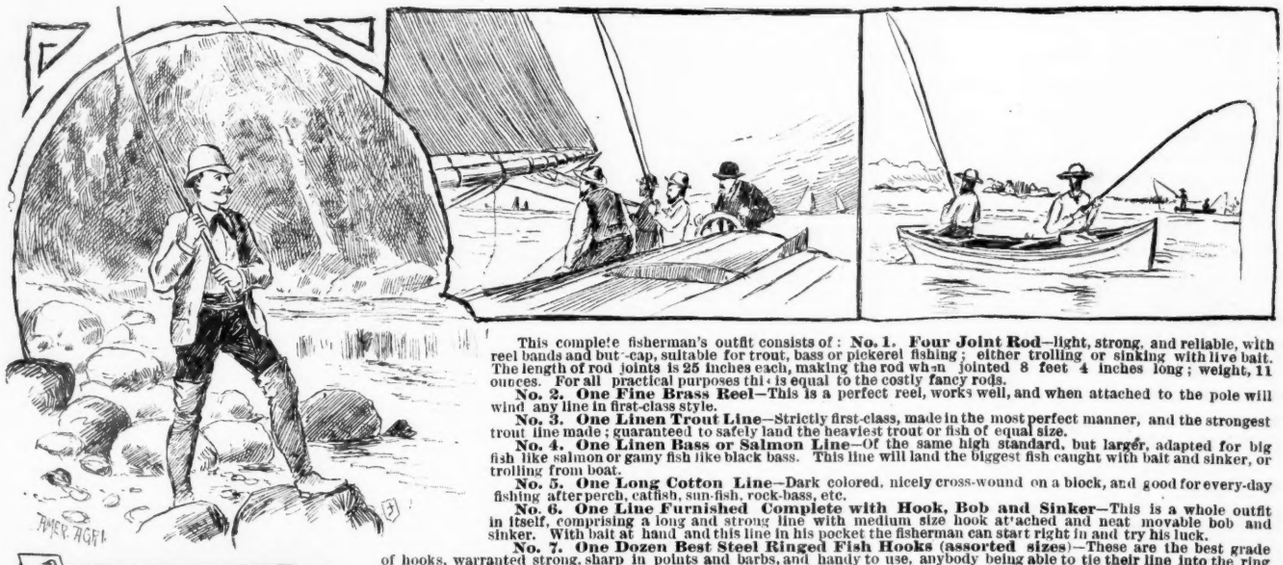

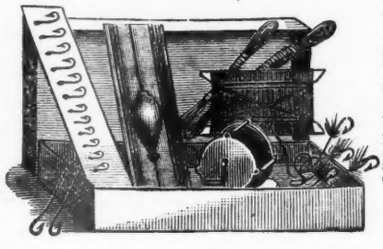

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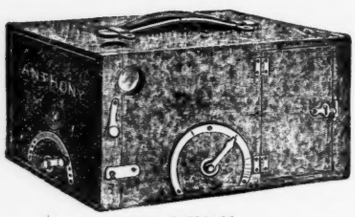

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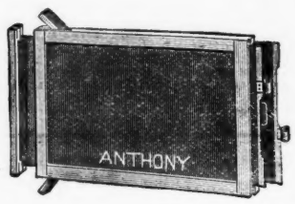

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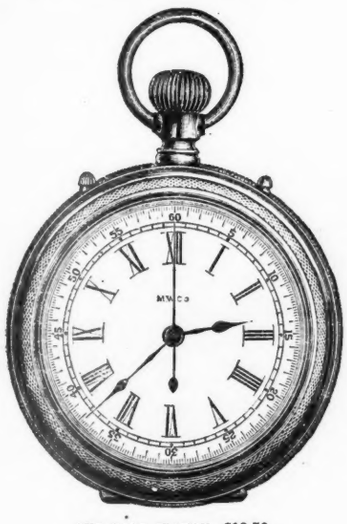

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